ANGLIA RUSKIN UNIVERSITY

Lord Ashcroft International Business School/ Cambridge

THE IMPACT OF MARKET FUNDAMENTALS AND FINANCIAL CRISIS ON THE LIQUIDITY OF BANKS AND STOCK MARKETS: EVIDENCE FROM JORDANIAN INVESTORS

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ABSTRACT

LORD ASHCROFT INTERNATIONAL BUSINESS SCHOOL

DOCTOR OF PHILOSOPHY

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Mohammad Sami Mohammad Ali

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This research investigates the impact of market fundamentals like the time deposit interest rates (TDIR), the market-to-book value ratio (M/BV), the price to earnings ratio (P/E) and the inflation as captured by the consumer price index (CPI) in the decisions of Jordanian investors. The study also focuses on assessing the impacts of the 2007/8 financial crisis in the decisions of Jordanian investors, over the period Q1/2000-Q4/2014. In this research investors' decisions are mainly captured by using both the liquidity of the Jordanian commercial banks, and the Amman Stock Exchange. However, after discussing the available literature, the study found that though the economy of Jordan fluctuates considerably, there is no previous research addressed the impact of the fluctuations in the TDIR, M/BV ratio, P/E ratio and the CPI (Market Fundamentals) in the perception of Jordanian investors as measured by the liquidity of banks and the Amman Stock Exchange. Thus, through filling this gap in literature, the study expects to provide investors and decision makers with important information regarding the role of market fundamentals in the process of decision making. Additionally, the study will suggest a framework to help investors to rationalise their decisions, during both the tranquil and the unstable financial periods. Moreover, to accomplish the core aim of this research, the study formulates four main hypotheses.

The first hypothesis postulates that the fluctuations in market fundamentals like the TDIR, M/BV, P/E and the CPI are significantly affecting the decisions of Jordanian investors. The second hypothesis assumes a long-run integration between the fluctuations in market fundamentals along with the decisions of Jordanian investors. The third hypothesis postulates a long and short-run causality that is running from the volatility in the TDIR, M/BV ratio, P/E ratio and the inflation towards the decisions of Jordanian investors. The fourth hypothesis suggests that pre, during or post the crisis period, there are no significant differences between investors' decisions, due to the effects of the fluctuations in market fundamentals. However, to test these hypotheses, the current research employs a time series data those are mainly drawn from the official sites of the Amman Stock Exchange, the Central Bank of Jordan, the department of statistics and the Jordanian commercial banks. Thus, since the using of time series data leads to get spurious regression results, the ADF

was applied in order to check for data stationarity and to avoid the problem of getting spurious regression results. Consequently, the results revealed that only after adding the first difference, the variables became stationary.
Thereafter, results from the regression tests reported that the decisions of Jordanian investors are not impacted by the volatility in the TDIR, M/BV and P/E ratio. However, the findings showed that the volatility in the CPI is significantly impacting the decisions of Jordanian investors as measured by the turnover ratio, trading volume and the number of transaction. After that the study applied the Johansen Co-integration, the VECM and the Wald tests in order to check if there are long or short-run correlations between the examined variables. As a result, the findings showed that investors of Jordan rely on the liquidity of banks in order to evaluate the market's liquidity as captured by the trading volume. Additionally, the results revealed that investors of Jordan prefer to employ their funds into the banks when the ratio of M/BV, P/E, TDIR and the CPI are high. By contrast, the market-to-book value and the price to earnings ratios are found to be negatively correlating with the market's liquidity as captured by the number of transactions. Furthermore, findings from the Wald tests revealed that there is no short-run correlation between the TDIR, M/BV, P/E or the CPI along with investors' decisions as measured by the total loans to total deposits. However, the study found that on the short-run investors of Jordan behave rationally towards the fluctuations in market fundamentals like the TDIR, M/BV, P/E and the CPI.
Beyond that, the findings showed that the 2007/8 financial crisis was weakly impacted investors' behaviour as captured by the liquidity of banks and the Amman Stock Exchange. Moreover, the study concluded that during the crisis period investors of Jordan became more rational, but before the crisis period they found to be risk seekers. The study also concluded that in the long-run investors of Jordan behave rationally towards the volatility in the TDIR, M/BV, P/E and the CPI, as well as they relied on the market's liquidity in order to evaluate the liquidity of banks. However, on the short-run investors of Jordan did not rely on the liquidity of the Amman Stock Exchange in order to evaluate the liquidity of banks. Through relying on the results of this research, the study recommended investors of Jordan to use market fundamentals like the TDIR, M/BV, P/E and the CPI in order to make rational investment decisions. Furthermore, the findings of this research are expected to contribute in helping investors to enhance the process of making rational investment decisions, as well as extending the available literature, which is focused on investors' decisions and saving behaviour.

Keywords: Market Fundamentals, Market's Liquidity, Banks' Liquidity, Financial Crisis, Investors' Decisions.

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ABBREVIATIONS

ASE	Amman Stock Exchange
ASEL	Amman Stock Exchange's Liquidity
JCBL	Jordanian Commercial Banks' Liquidity
TDIR	Time Deposit Interest Rates
M/BV Ratio	Market-to-Book Value Ratio
P/E Ratio	Price to Earnings Ratio
Inflation	Relates to the Consumer Price Index (CPI)
LATA	Liquid Assets to Total Assets
LATD	Liquid Assets to Banks' Total Deposits
TLTD	Total Loans to Total Deposits
TDTA	Total Deposits to Total Assets
TOR	Turnover Ratio
TV	Trading Volume
VT	Value Traded
NOT	Number of Transactions
WATDIR	Weighted Average Time Deposit Interest Rate
ADF	Augmented Dickey Fuller Test
VAR	Vector Autoregressive Test
VECM	Vector Error Correction Model
Crisis	Global Financial Crisis
JOD	Jordanian Dinar
USD	US Dollar

CBJ	Central Bank of Jordan
SDC	Securities Depository Centre
JSC	Jordan Securities Commission
AFM	Amman Financial Market
IMF	International Monetary Fund
GBP	Great British Pound
CDs	Certificate Deposits
MENA	Middle East and North Africa
LM	Lagrange-Multiplier Test

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Chapter One: Introduction

Chapter One: Introduction

1.1 Research Background

This research aims at assessing the impact of market fundamentals like the time deposit interest rates, M/BV ratio, P/E ratio and the CPI in the liquidity of Jordanian commercial banks and the Amman Stock Exchange. The study also tries to identify the impacts of the 2007/8 financial crisis in the behaviour of Jordanian investors. However, since the economy of Jordan is a financial based economy, it heavily relies on the performance of banks and the Amman Stock Exchange (ASE from here onwards). For instance, the contribution of the Jordanian banking sector in the country's GDP was 7.2% in 2009, compared with 2.8% and 6.6% in 1999 and 2007, consecutively. On the other hand, the market capitalisation of the Amman Stock Exchange represents 150% in 2009, 289% and 75% by the end of 2007 and 1999, respectively (ASE, 2014).

However, due to the impacts of deregulation, political instability and the set of global financial crises on the economy of Jordan, the last decades showed that the performance of the banking and financial system has fluctuated dramatically. This unstable financial environment has led to sharp movements in market fundamentals indicators like the time deposit interest rates, market-to-book value ratio, price to earnings ratio and the inflation captured by the consumer price index. However, although a considerable number of researchers like Vodova (2013); Al-Ali and Kassem (2013); Ojeaga and Odejimi (2014); Yamin and Ali (2014); Shaban and Al-Zubi (2014); Ali (2016); Al-Deehani (2005); Finn (2006); Vodova (2011a); Jongwanich (2010) have appraised the importance of the interest rates, M/BV ratio, P/E ratio and the inflation to the process of decision making and inves-

tors' behaviour, there is no previous study which addresses the impact of the fluctuations in these fundamentals variables in the perception of Jordanian investors.

Moreover, the current research is mainly designed in order to assess the effect of the fluctuations in the TDIR, M/BV, P/E ratio and the inflation in the decisions of Jordanian investors. According to this research, investors' decisions are captured by using both the liquidity of the Jordanian commercial banks and the Amman Stock Exchange, over the period Q1/2000-Q4/2014. In addition, since the economy of Jordan, like other developing economies in the region, was adversely impacted by the crisis of 2007/8, the study also seeks to understand the effects of this crisis in the behaviour of Jordanian investors.

However, though the openness of the Jordanian economy is limited with the other global economies, it did not escape the impacts of the latest financial crisis. For example, in 2007, among the other MENA region countries, Jordan was considered as the second-highest receiver of workers' remittances and financial aids. Since this small economy highly relies on remittances and foreign grants to cover its deficit, the impact of the financial crisis in the Arab Gulf countries has tightened the inflow of remittances and the financial aids to Jordan. Consequently, in 2008 the GDP growth rates in Jordan declined to zero, compared with a positive growth in 2007 (Lin, 2014; Habibi, 2009). Anyway, since the country's financial system performs as a barometer of economic activity, the impact of this crisis on economic growth was negatively influenced the performance of the ASE and the Jordanian banking sector (e.g. Al-Zyadat and Al-Kharabsheh, 2013; Zeitun and Ben-Jelloun, 2013). By contrast, Al-Majali and Al-Assaf (2014); Mashal (2012) find an insignificant correlation between the financial crisis along with the performance of the Amman Stock Exchange and the Jordanian banks.

Chapter One: Introduction

Studies including Mora (2010) mentioned that the latest financial crisis was negatively influenced the levels of the interest rates, and the performance of financial markets, through affecting investors' behaviour. For example, during the crisis period investors preferred to liquidate their securities in order to employ them in less risky investments, such as treasury bills and bank deposits. Thus, since there is a significant correlation between the interest rates on the Jordanian dinar and the US dollar, the behaviour of the Jordanian investors is assumed to be affected by this crisis. Maybe this view holds true for the Jordanian market, since it is experienced similar volatility due to the impacts of the 2007/8 financial crisis. This volatility was in part caused by the currency being pegged to the US dollar.

In Jordan, during the period 2007 towards the first half of 2008, the fluctuations in the time deposit interest rates were relatively stable. However, in the period of Q3/2008 and Q1/2009, these rates increased dramatically. Therefore, to protect banks from the challenges of the financial crisis, in 2009, the Central Bank of Jordan (CBJ from here onwards) decreased the deposits' interest rates by 150%, while it kept the rates of the credit facilities relatively high. As a result, this action not only declined the growth of the credit facilities, or portfolio revenues, but it is also affected the confidence of the investing public in the official currency and banks' liquidity. To recover their confidence, in 2012 the CBJ raised the levels of interest rates three times. Consequently, the share of deposits as denominated by the Jordanian Dinar (JOD) rose by 71% in 2012, compared with 66% in 2007 (CBJ, 2015). Moreover, identifying the determinants of investors' behaviour has been an issue of rising importance in the field of behavioural finance. Thus, for a thorough

understanding of the impacts of market fundamentals and the financial crisis in the decisions of Jordanian investors, this research was mainly designed.

The theory of conventional economy argues that the performance of stock markets is negatively related to the levels of interest rates. Whereas, the higher interest rates motivate investors to shift their funds from risk instruments such as stocks, in order to invest them in fixed, or saving banks' accounts in the hope of getting higher returns. Thus, due to the importance of the interest rates to the stock markets' performance, measuring the impact of interest rates in the performance of stock markets is being studied intensively. These studies suggested that the change in interest rates is associated either positively or adversely with the stock market's performance or investors' behaviour (e.g. Khan, et al., 2012; Ali, 2014; Thang, 2009; Aurangzeb, 2012; Uddin and Alam, 2007; Al-Majali and Al-Assaf, 2014; Al-Zu'bi, 2000; Chordia, Roll and Subrahmanyam 2010; Amador, et al., 2013).

Studies like Lobo (2000); Bauman (1997) mentioned that since the performance of financial markets heavily relies on economic growth and activities, the stability of stock markets is sensitive to the volatility in interest rates and the way of how governments regulate their policies. Indeed, the monetary policy in Jordan is widely believed to affect the performance of the Amman Stock Exchange and asset prices. For example, since the monetary policy in Jordan primarily aims to monitor the stability of price levels, and promote sustainable growth rates, the performance of the Amman Stock Exchange is assumed to be highly reliant on the decisions of monetary policy and the levels of interest rates. In this context, Al-Zyadat and Al-Kharabsheh (2013) find an inverse relationship between the volatility in interest rates and the stock prices in Amman Stock Exchange.

Furthermore, since the interest rates play a vital role in the process of funds allocation, there have been a considerable number of studies carried out in order to identify the role of deposit interest rates to determine investors' decisions. These studies confirmed that the higher deposit interest rates encourage investors to deposit their money into the banks rather than employing them in other investment alternatives. By contrast, when these rates decline over time, investors find it worthwhile diverting their financial resources into investment in stock market instead (e.g. Choudhry, et al., 2010, p. 11; Krugman and Wells, 2013; p. 715, Ojeaga and Odejimi, 2014; El-Seoud, 2014). Nevertheless, there are some other studies tend to examine the potentiality of M/BV ratio and P/E to affect investors' decisions and the stock market's performance (e.g. Shaban and Al-Zubi, 2014; Yamin and Ali, 2014; Aydoğan and Gürsoy, 2000). However, researchers including Vodova (2011a); Alper and Anbar (2011); Jongwanich (2010) focused on assessing the impact of inflation in the liquidity of banks and saving behaviour. Moreover, since the available literature shows a gap regarding the impact of market fundamentals like the TDIR, M/BV, P/E ratio and the inflation in the liquidity of the Jordanian commercial banks and the ASE, it can be inferred that measuring the impact of market fundamentals in the decisions of Jordanian investors is crucial. Therefore, results from this research are expected to help Jordanian investors to realise the impact of these variables in the process of decision making.

The last period showed that the economy of Jordan witnessed structure fluctuations pre and post-financial crisis and market fundamentals variables such as the time deposit interest rates, market-to-book, price to earnings ratio and the inflation, lie at the heart of these fluctuations. Consequently, that is resulted in increasing the ratio of the M/BV from 1.12 in 2000 to 2.91 in 2006, then it declined to 1.45 and 1.315 by the end of 2012 and 2014,

respectively (ASE, 2014). During the same period, the P/E ratio increased from 14.82 in 2000 to 16.74 in 2006, before declined to 15.57 and 15.30 by the end of 2012 and 2014, respectively. The interest rate on time deposit fell from 6.55% in 2000 to 2.88% in 2002, before increased to 6.49% in 2006, and ultimately it declined to 4.11% by the end of 2014. By contrast, during the period 2000-2014, the inflation as captured by the CPI was increased from 67.10 in 2000 to 69.55 in 2002, and then it was increased to 80.20 by the end of 2006, and ultimately it was increased to 117.42 by the end of 2014 (CBJ, 2015). Anyway, though these fundamental variables have witnessed dramatic fluctuations, the previous studies have not answered the impacts of the movements in the time deposit interest rates, M/BV ratio, P/E as well as the inflation in the decisions of Jordanian investors including the effects of the 2007/8 financial crisis.

Therefore, to fill this gap in literature, this research aims at answering the impact of the fluctuations in the TDIR, M/BV ratio, P/E ratio and the inflation in the decisions of Jordanian investors. These decisions are primarily captured by using the liquidity of the Jordanian commercial banks and the ASE. In this research, the liquidity of banks is typically measured by using ratios like the liquid assets to total assets (LATA), total loans to total deposits (TLTD), liquid assets to total deposits (LATD) and total deposits to total assets (TDTA). The liquidity of the Amman Stock Exchange was captured by using the turnover ratio (TOR), number of transaction (NOT), value traded (VT) and the trading volume (TV). However, since the economy of Jordan (the same as other developing economies in the region) was adversely impacted by the 2007/8 financial crisis, this study also aims to understand the impacts of this crisis in the liquidity of the Jordanian commercial banks

and the Amman Stock Exchange as proxies for investors' behaviours. Thus, to identify the implications of this crisis on the behaviour of Jordanian investors, the study period was split into three stages. These phases included the pre-crisis period that is spanned from Q1/ 2000 to Q4/ 2007, the crisis period from Q1/ 2008 to Q4/ 2011 and the post period covered the period Q1/2012-Q4/2014.

1.2 Research Motivation

The last period revealed that the economy of Jordan has witnessed considerable movements, pre, during and post-financial crisis and variables like the time deposit interest rates and market-to-book value ratio, price to earnings ratio and the inflation lie in the middle of these fluctuations. For instance, during the period 2000-2006, the ratio of M/BV increased from 1.12 to 2.91, and then declined to 1.45 and 1.315 at the end of 2012 and 2014, respectively. During the same period, the P/E ratio increased from 14.82 in 2000 to 16.74 in 2006, before declined to 15.57 and 15.30 by the end of 2012 and 2014, respectively. Likewise, the time deposit interest rates, fell down from 6.55% to 2.88% during the period 2000-2002, then increased to 6.49% in 2006, and ultimately declined to 4.11 by the end of 2014. The inflation as captured by the CPI increased from 67.10 in 2000 to 69.55 in 2002, and then increased to 80.20 by the end of 2006, and ultimately increased to 117.42 by the end of 2014.

However, though the change in these four metrics might adversely affected the perception of Jordanian investors as well as the performance of the banking and financial sector, the available literature still shows a gap regarding the impact of the fluctuations in market

fundamentals in the decisions of Jordanian investors. In addition, the existing literature also shows a gap regarding the effects of the 2007/8 financial crisis in the liquidity of the Jordanian commercial banks and the Amman Stock Exchange as main proxies for investors' behaviour.

The issue of determining the influential variables on investors' decisions is something which has been studied intensively (Choudhry, et al., 2010; Ojeaga and Odejimi, 2014; Helfert, 2001; Finn, 2006; Wong and Fung, 2002; Vodova, 2011a; Yamin and Ali, 2014; Shaban and Al-Zubi, 2014). However, the outcome of these studies does not explain the impact of interest rates, M/BV, P/E ratio and the inflation in the perception of Jordanian investors as measured by the liquidity of banks and the ASE. In addition, it is confirmed that a majority of the previous related studies have not identified the impact of the recent financial crisis in investors' behaviour, as measured by the liquidity of banks, and the stock markets. Thus, since the perception of Jordanian investors is expected to be more sensitive to the fluctuations in market fundamentals, it is necessary to fill the gap in literature through assessing the impact of the fluctuations in the TDIR, M/BV, P/E ratio and the inflation in the decisions of Jordanian investors. These decisions are measured by the liquidity of Jordanian commercial banks and the ASE. Furthermore, since the economy of Jordan (along with other developing economies in the region) was adversely influenced by the 2007/8 crisis this study also tries to understand the behaviour of Jordanian investors towards the impacts of the recent global financial crisis.

Another motivation for this study is the controversy over the impacts of the 2007/8 financial crisis in the performance of the Amman Stock Exchange and the Jordanian banking sector. For instance, the relevant literature is divided into two opposing viewpoints regard-

ing the impacts of this crisis in the performance of the Amman Stock Exchange and the Jordanian banking sector. On the one hand, studies like Al-Zyadat and Al-Kharabsheh (2013), argue that the recent crisis was adversely affected the performance of the banking sector and the Amman Stock Exchange. On the other hand, Al-Majali and Al-Assaf (2014); Ahid and Augustine (2012); Mashal (2012) found a non-significant relationship between the global financial crisis and the performance of the banking sector or the Amman Stock Exchange. However, in a different style, the current research tries to fix this debate through using the two-way Anova test. This test will be used in order to compare the behaviour of Jordanian investors before, during and after the 2007/8 financial crisis. In this research investors' behaviour is typically measured by using the liquidity of the Jordanian commercial banks and the Amman Stock Exchange. Thus, through accomplishing the core aim of this research, the current study will propose a framework to guide investors to allocate their funds efficiently in the financial institutions of Jordan.

Moreover, by using a set of advanced empirical techniques, this study will propose a framework to guide investors in allocating their funds rationally. This framework will be simply constructed through comparing the impacts of the TDIR, M/BV ratio, P/E ratio and the inflation before, during and after the financial crisis in the behaviour of Jordanian investors. More specifically, after dividing the study period into three stages, the study applied the Pearson correlation tests in order to compare the relationship of the TDIR, M/BV ratio, P/E ratio and the inflation along with the behaviour of Jordanian investors before, during and after the crisis period. Thus, relying on the correlation results, the study will construct a framework in order to guide investors in the process of decision making. Consequently, this is expected to improve investors' skills, and make them active contributors

in the country's economy. In other words, since the findings of this research are expected to help investors to allocate their funds efficiently, that will be positively contributed in economic growth and development. However, in the previous literature there are few studies, which have explained the financial determinants of investors' decisions and saving behaviour. Thus, by accomplishing the main aim of this research, the study will identify the determinants of investors' decisions as measured by the liquidity of banks and the stock market. Furthermore, through explaining the impacts of the 2007/8 financial crisis in investors' behaviour, results from this study will assist investors to allocate their financial resources efficiently during both the stable and the unstable financial periods.

1.3 Research Rationale

The rationale behind initiating this research, lies in the well documented findings in literature, regarding the role of deposit interest rates, M/BV ratio, P/E ratio as well as the inflation to shape investment decisions and saving behaviour (e.g. Haron and Azmi, 2006; Olokoyo 2011; Ojeaga and Odejimi, 2014; Helfert, 2001; Finn, 2006; El-Seoud, 2014; Agrawals, Sahoo, and Dash, 2008, Jongwanich 2010). However, during the period 2000-2014, the ratio of M/BV increased from 1.12 in 2000 to 2.91 in 2006, before declined to 1.45 and 1.315 in 2012 and 2014, respectively (ASE, 2014). During the same period, the P/E ratio increased from 14.82 in 2000 to 16.74 in 2006, before declined to 15.57 and 15.30 by the end of 2012 and 2014, respectively. However, though previous researchers like (Yamin and Ali, 2014; Shaban and Al-Zubi, 2014) appraised the ability of these ratios to rationalise investors' decisions, there is no research assessed the impact of the M/BV

ratio and the P/E ratio in the decisions of Jordanian investors as measured by the liquidity of banks and the ASE. Additionally, the securities commission of Jordan recommended investors of the ASE to rely on this ratio in order to evaluate their investment decisions. Anyway, there is no evidence to explain the role of the M/BV and the P/E ratios in the decisions of Jordanian investors as measured by the liquidity of banks and the Amman Stock Exchange.

Similarly, during the period 2000-2014, the time deposit interest rates fluctuated considerably. These rates fell down from 6.55% in 2000 to 2.88% in 2002, increased to 6.49% in 2006, and ultimately declined to 4.11% by the end of 2014 (CBJ, 2015). By contrast, during the period 2000-2014, the inflation as captured by the CPI increased from 67.10 in 2000 to 69.55 in 2002, and then increased to 80.20 by the end of 2006, and ultimately increased to 117.42 at the end of 2014. However, though fundamental variables like the TDIR, M/BV ratio, P/E ratio and the inflation are sensitive to market fluctuations, there is no study performed to illustrate the impact of these variables in the decisions of Jordanian investors. Additionally, the previous studies showed a gap regarding the impacts of the 2007/8 financial crisis in the behaviour of Jordanian investors as captured by the liquidity of banks and the stock market. Moreover, the current research aims at investigating the impact of the fluctuations in market fundamentals like the TDIR, M/BV, P/E and the inflation in the decisions of Jordanian investors, over an extended period Q1/2000-Q4/2014. In addition, since the economy of Jordan was adversely affected by the 2007/8 crisis, this study also seeks to compare the behaviour of Jordanian investors, before, during and after the global financial crisis. Therefore, this research is distinguished as the first Jordanian

study, which focuses on identifying the response of Jordanian investors towards the volatility in the TDIR, M/BV, P/E and the inflation.

1.4 Research Problem and the key Question (s)

Jordan is a small Arab economy that is located in the middle of MEAN region countries. However, since this small economy is mainly relied on the performance of the banking and financial system, the current research is mainly aimed at investigating the impact of the fluctuations in market fundamentals like the TDIR, M/BV ratio, P/E and the inflation in the decisions of Jordanian investors as measured by the liquidity of banks and the ASE. The reasons behind focusing on the TDIR, the M/BV ratio, P/E ratio and the inflation relate to the well documented findings regarding the role of these variables in the process of decisions making as well as due to the considerable fluctuations in these four metrics. More specifically, the last period showed that the economy of Jordan witnessed structure fluctuations pre and post-financial crisis and market fundamentals like the TDIR, M/BV, P/E and the inflation lie at the middle of these fluctuations. Accurately, these fluctuations resulted in increasing the ratio of M/BV from 1.12 in 2000 to 2.91 in 2006, and then it was declined to 1.45 and 1.315 by the end of 2012 and 2014, respectively. The P/E ratio increased from 14.82 in 2000 to 16.74 in 2006, before declined to 15.57 and 15.30 by the end of 2012 and 2014, respectively (ASE, 2014). On the other hand, the interest rate on the time deposit accounts fell down from 6.55% in 2000 to 2.88% in 2002, before increased to 6.49% in 2006, and ultimately it was declined to 4.11% at the end of 2014. Additionally, the inflation as captured by the CPI increased from 67.10 in 2000 to 69.55 in

2002, and then increased to 80.20 by the end of 2006, and ultimately increased to 117.42 by the end of 2014 (CBJ, 2015).

Anyway, though these four variables have fluctuated considerably, the available literature has not elaborated the role of the movements in the time deposit interest rates, M/BV ratio, P/E ratio and the inflation in the decisions of Jordanian investors, as measured by the liquidity of the Jordanian commercial banks and the ASE. In addition, though the securities commission of Jordan recommends the ASE's investors to rely on the M/BV ratio to evaluate their decisions, however, there is no previous study answered the impact of the M/BV ratio in investors' decisions as measured by the liquidity of the Jordanian commercial banks and the ASE. Furthermore, since the economy of Jordan such as other developing economies in the region was significantly impacted by the 2007/8 financial crisis, the current research tries to assess the impacts of the 2007/8 financial crisis in the behaviour of Jordanian investors. Moreover, the current research attempts to answer the following main and sub question (s):

- Do the fluctuations in the time deposit interest, market-to-book value ratio, price to earnings ratio and the inflation affect the decisions of Jordanian investors, before, during or after the 2007/8 financial crisis?

This main question is split into these following questions:

- To what extent do the fluctuations in the TDIR, M/BV ratio, P/E ratio and inflation affect the liquidity of the Jordanian commercial banks?
- To what extent do the fluctuations in the TDIR, M/BV ratio, P/E ratio and inflation affect the liquidity of the Amman Stock Exchange?

- Are there significant correlations between the fluctuations in the TDIR, M/BV ratio, P/E ratio and inflation along with the liquidity of the Jordanian commercial banks and the Amman Stock Exchange?
- Is there a significant correlation between the liquidity of the Jordanian commercial banks and the liquidity of Amman Stock Exchange?
- Are there statistical differences between the behaviour of Jordanian investors before, during or after the 2007/8 financial crisis due to the impacts of the fluctuations in the TDIR, M/BV ratio, P/E ratio or the inflation?

1.5 Research Aim and Objectives

Through reviewing the available literature, earlier studies including (Thang, 2010; Aurangzeb, 2012; Vodova, 2011a; Ojeaga and Odeijimi, 2014; Finn, 2006; Aydogan, 2000; Al-Ali and Kassem, 2013; Acosta and Loza, 2005) confirmed that variables like the deposit interest rates, and the inflation play a vital role in shaping investor's decisions. Yamin and Ali (2014); Shaban and Al-Zubi (2014); Utama and Sentosa (1998) argue that ratios like the P/BV and the P/E play a vital role in evaluating investment decisions through assisting investors to assess whether the stock's prices are trading over or under their intrinsic values. However, since there is no study which assesses the impact of the time deposit interest rates, M/BV ratio, P/E ratio and the inflation in the decisions of Jordanian investors, this research is primarily aimed at assessing the impacts of the fluctuations in the TDIR, M/BV, P/E and the inflation in the decisions of Jordanian investors. These decisions are mainly captured by using the liquidity of Jordanian commercial banks

and the ASE. In addition, this study also tries to understand investors' behaviour towards the impacts of the 2007/8 financial crisis. For this purpose, the study attempts to attain these following objectives:

- Identify the ability of market fundamentals to shape the decisions of Jordanian investors.

- Identify the potential determinants of banks and stock market's liquidity.

- Proposing a framework to assist investors to allocate their funds efficiently in the Jordanian financial institutions.

- Through identifying the determinants of investors' decisions as well as the impacts of the 2007/8 crisis in investors' behaviours, this study expects to help investors to rationalise their decision during both the stable and the unstable financial periods.

- Identify the impact of the Amman Stock Exchange's liquidity in the liquidity of the Jordanian commercial banks.

- Evaluate the investment rationality of the Jordanian investors.

Moreover, since market fundamentals like the TDIR, M/BV, P/E and the inflation are found to be used in the process of decision making, this research is mainly initiated to assess the impact of the volatility in market fundamentals in the decisions of Jordanian investors. Through fulfilling the study's aim and objectives, the results are expected to help

investors to allocate their funds efficiently in the financial institutions of Jordan. Consequently, that will enhance the performance of the banking and financial system and eventually, improving the economy of Jordan as a whole. However, since there is a lack in literature regarding the impacts of market fundamentals in the liquidity of Jordanian commercial banks and the ASE, the current research will provide the managements of these institutions with important information regarding the determinants of the liquidity of banks and the ASE. Additionally, the study also aims at explaining the impact of the 2007/8 financial crisis in the behaviour of Jordanian investors. Consequently, results from this research will help investors as well as decision makers to rationalise their investment decisions during both the stable and the unstable financial periods.

1.6 Research's Contribution

The current research aims at investigating the impact of the volatility in market fundamentals in the decisions of Jordanian investors as measured by the liquidity of banks and the Amman stock exchange. However, through reviewing a set of the previous related studies, it is found that there are numerous studies concerning with the determinants of the liquidity of banks, and financial markets (e.g. Ali, 2016; Wong and Fung, 2002; Chordia, Roll and Subrahmanyam, 2001; Amador, et al., 2013; Kemboi and Tarus, 2012; Bogdan, Bareša and Ivanovic, 2012; Kim, 2013; Aikaeli, 2006; Ojeaga and Odejimi, 2014; Al-Ali and Kassem, 2013; Abdul-Khaliq, 2013). In addition, authors including (Aydogan, 2000; Al-Deehani, 2005; Helfert, 2001, p.387; Finn, 2006; Utama and Sentosa, 1998; Yamin and Ali, 2014; Shaban and Al-Zubi, 2014) have appraised the importance of using the M/BV

ratio and the P/E ratio as effective tools to evaluate whether a firm's share price is trading over or under its intrinsic value. Some other studies focused on identifying the relationship between interest rates and saving behaviour (e.g. Ojeaga and Odejimi, 2014; El-Seoud, 2014; Kaberuka and Namubiru, 2014; Agrawals, Sahoo, and Dash, 2008; Anderson and Goldsmith, 1997).

Although these studies explored the potential determinants of investors' decisions, as well as the liquidity of banks and the stock markets, the available studies did not explain the impact of market fundamentals in the liquidity of banks and stock markets as proxies for investors' decisions. Therefore, to the best of my knowledge, this research can be considered as the first Jordanian study, which is focused on assessing the impact of the volatility in the TDIR, M/BV, P/E and inflation in the decisions of Jordanian investors. These decisions are primarily captured by using the liquidity of the Jordanian commercial banks and the Amman Stock Exchange. Additionally, the study aims to understand the impacts of the 2007/8 financial crisis in the behaviour of Jordanian investors. Moreover, through achieving the main aim of this research, the study will make a significant theoretical and empirical contribution to the existing knowledge:

I. Theoretically

The conventional economy theory assumes that the performance of the stock markets is negatively related to the interest rates. Whereas, the higher interest rates motivate investors to shift their funds from risk instruments such as stocks to invest in fixed, or saving

banks' accounts in the hope of getting higher returns. On the other hand, when these rates decline over time, investors find it worthwhile diverting their financial resources into investment in the stock markets instead (Thang, 2009). The review of literature showed that there are many studies supported this assumption (e.g. Al-Mukit, 2012; Ali, 2014; Aurangzeb, 2012). However, since there is no previous study which addresses the impact of the interest rates in the decisions of Jordanian investors as measured by the liquidity of banks and the stock market, the results from this research are expected to help investors of Jordan to know if the above assumption applies to developing economies like the economy of Jordan. For instance, if the study succeeded in accepting the hypothesis which assumes a positive correlation between the change in interest rates and the liquidity of banks, this study will recommend the assumption of the conventional theory for Jordanian investors in order to help them to rationalise their investment decisions. However, if the study rejected this hypothesis, the study will tend to advice investors of Jordan to avoid the assumption of the theory, which postulates a positive relationship between the liquidity of banks and the volatility in interest rates.

Additionally, since authors like Helfert (2001); Shaban and Al-Zubi (2014); Yamin and Ali (2014) appraised the ability of the M/BV and P/E ratios to evaluate whether a stock price is trading over or under its intrinsic value, the current research will investigate the role of these ratios in the process of decision making. Thereby, investors will be able to make rational investment decisions as well as avoiding the losses, which are expected to be occurred through investing in the overvalued stocks. Thus, through achieving the main aim of this research, the study is expected to add to the growing body of literature docu-

mented findings regarding the role of the time deposit interest rates, M/BV ratio, P/E and the inflation to rationalise investment decisions as saving behaviour.

Furthermore, in order to identify whether investors of Jordan are rational or irrational investors, the study formulated two assumptions. The first assumption postulates that when the time deposit interest rates and the inflation rise over time, investors of Jordan tend to allocate their financial resources into the banks. However, when these rates decline over time, investors find it worthwhile diverting their financial resources into investment in the stock market instead. The second assumption suggests that investors of Jordan can be considered to be rational investors when they invest their funds in the ASE when the ratios of the M/BV and the P/E go down, or if they are exploiting their money into the banks when these ratios go up. Thus, since the theory of the traditional economy, assumes that investors are considered to be rational when their decisions aim to take the benefit of the available opportunities, results from this research aim at investigating whether the behaviour of the Jordanian investors works in line with this assumption or not. Therefore, through accomplishing the aim of this research, the results are expected to help investors in making rational investment decisions.

II. Empirically

This research focuses on evaluating the impact of market fundamentals in the decisions of Jordanian investors, including the impacts of the 2007/8 financial crisis. To measure the crisis' impact, the study used the two-way Anova analysis test. Thus, through comparing investors' behaviour before, during and after the latest financial crisis, the study will con-

struct a framework in order to help investors, financial advisors and decision makers to rationalise their decisions, during both the tranquil and the unstable financial periods. However, the review of literature revealed that a majority of the previous related studies used techniques like the ordinary least square (OLS), Augumented Dickey Fuller (ADF) or the Johansen co-integration test in order to assess the impact of market fundamentals in the liquidity of banks and the stock markets (e.g. Ali, 2016, Vodova, 2013; Yam in and Ali, 2014; Talla, 2013). Additionally, studies like Zeitun and Benjelloun (2013) used the Anova analysis test in order to identify the impact of the recent financial crisis in banks' performance. However, through using the STATA software, the current research employed extra empirical techniques like the ADF test, multiple regression, Johansen co-integration test, vector autoregressive (VAR), vector error correction model (VECM), Wald and Pearson correlation tests, and the two-way Anova tests in order to achieve the study's aim and objectives. Thus, through explaining the role of market fundamentals in the process of decision making, results from this study are expected to assist investors to distribute their financial resources efficiently in the financial institution of Jordan. Consequently, that will in turn enhancing the performance of the Jordanian financial institutions, and eventually spurring economic growth and development.

Furthermore, the current study introduced six econometric models those can be used by further researchers who are focusing on assessing the potential determinants of investors' decisions as measured by the liquidity of banks or the stock markets. Anyway, in order to measure the relationship between the liquidity of banks and the stock market, the study built a dummy variable relates to the liquidity of the ASE and the commercial banks of

Jordan. Thus, through measuring the relationship between the liquidity of banks and the stock market, the study will help investors to know if the Jordanian banks and the stock market are complementary to each other in the process of funds allocation. Consequently, that will be able to help investors to rely on the liquidity of banks in an attempt to evaluate the stock market's liquidity, or vice versa. Thus, by helping investors to enhance the quality of their investment decisions, that will be positively linked with the performance of the banking and financial system. Beyond that this research is expected to help the managements of banks and the Amman Stock Exchange to determine investors' behaviour in the future. Subsequently, that will assist these managements to adjust their financial plans rationally. In other words, through identifying the role of market fundamentals in investors' behaviour, these managements will try to predict the volumes of deposits or securities, which are expected to be liquidated or invested during a specific period of time. Consequently, that will help these parties to manage their financial needs in the future, and subsequently avoiding the impacts of any expected financial crisis in the future.

1.7 Research's Limitations

This research is concerned with identifying the impact of the fluctuations in market fundamentals in investors' decisions including the impacts of the recent financial crisis. However, since its normal for researchers to face barriers while conducting their research; likewise, this study encountered a number of barriers. These barriers include the exclusion of the Islamic International Arab bank and the Islamic Bank of Jordan. The reason behind this exclusion relates to their nature and regulations as they do not include the factor of

interest rate in their banking operations. In addition, since the foreign banks in Jordan are not listed in the Amman Stock Exchange as well as do not publish their annual financial reports; it was necessary to exclude them from the study's sample as well. Therefore, the sample of this research encompasses all the thirteen Jordanian commercial banks and the Amman Stock Exchange.

One more boundary is data availability and consistency. The used data restricted the investigation period to extend from Q1/2000-Q4/2014. This period is opposed to span from the first quarter of 1995 to the last quarter of 2014. The reason behind thinking to extend the study's period is that if more data are employed, the study expects to get a clearer image regarding the role of TDIR, M/BV, P/E and the inflation in the decisions of Jordanian investors. Although the exclusion of the two Islamic banks decreased the study's sample as well as the data availability restricted the number of observations, however, the study was able to accept some hypotheses and explain the role of market fundamentals in the process of decision making. Thus, since the study's models succeeded in achieving aims and objectives, other researchers can rely on the provided frameworks and models to continue with new and larger data set. Another limitation is that the lack in literature regarding the impact of TDIR, M/BV ratio, P/E ratio and inflation in investors' decisions as measured by the liquidity of banks and the stock markets.

Chapter One: Introduction

1.8 Research Structure

The structure of this Research is organised as shown in figure 1:

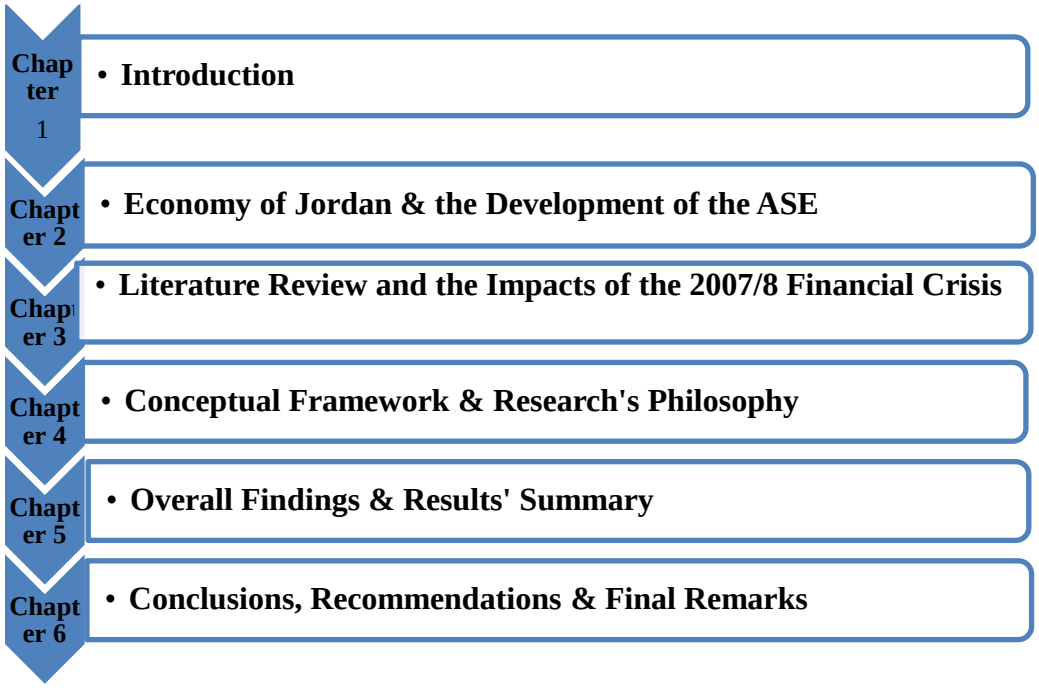

Figure 1: Research Structure

This research includes six chapters. Thus, following the introductory chapter, the second chapter illustrates the economy of Jordan, banking system and the development of the Amman Stock Exchange. In chapter number three, the study presents a critical appraisal of the previous studies, which are focused on identifying the potential determinants of banks and the stock markets' liquidity as well as investors' decisions and saving behaviour. After that the chapter continues to explain the causes of the 2007/8 financial crisis, and its implications on the MENA region economies in general, while on the economy of

Jordan particularly. Thereafter, the study tends to discuss the basis of this research and the gap in literature. Eventually, the chapter ends with a summary regarding the previous studies, which are related to this research. The fourth chapter discusses the study's inquiry, conceptual framework, objectives and the hypotheses' development. The chapter continues to discuss the research's philosophy and design. The fifth chapter focuses on discussing the overall findings, which are achieved by this research. Finally, the sixth chapter presents the study's conclusion, recommendations and the final remarks.

1.9 Chapter Summary

This chapter sheds the light on providing an overview about the economy of Jordan and the influential variables on the performance of banking and financial system. The chapter also focuses on elaborating the importance of market fundamentals in the process of decision making as well as the gap in literature regarding the determinants of investors' decisions. Thereafter, the study continues to present the study's motivation and the main reasons behind initiating this research. After that the chapter continues to present the research's rationality as well as the problem statement and the main enquiries. Then the chapter moved on to discuss the main aims and objectives as well as the expected contribution to the existed knowledge. Furthermore, the chapter discussed the main limitations which have restricted the number of observation and the sample size of this research. Lastly, I provided a figure illustrates the structure and the main chapters of this research. However, since this research concentrates on assessing the impact of market fundamentals in the decisions of Jordanian investors as measured by the liquidity of the Jordanian com-

mercial banks and the ASE, the next chapter is constructed to explain the economy of Jordan, the banking and financial system as well as the development of the Amman Stock Exchange. Thus, the aim of the second chapter is to provide the reader with important information regarding the main components of the Jordanian banking and financial system. The coming chapter also focuses on explaining the performance of the Amman Stock Exchange and the Jordanian banking sector.

Chapter Two: The Economy of Jordan

Chapter Two: The Economy of Jordan

The main aim of this study is to evaluate the impact of the TDIR, M/BV, P/E ratio and the inflation in the decisions of Jordanian investors. For this purpose, the previous chapter provides an overview about the economy of Jordan and the importance of the TDIR, M/BV ratio, P/E ratio and the inflation in the process of decision making. The chapter also illustrates the gap in literature regarding the impacts of the 2007/8 financial crisis in the behaviour of Jordanian investors. Thereafter, the chapter proceeds to present the study's motivation and the main reasons behind initiating this research. After that it continues to present the research's rationality as well as the problem statement and the main enquiries. Then the chapter moved on to discuss the main aims and objectives as well as the expected contribution to the knowledge. However, since the previous chapter only gives an overview about the economy of Jordan, this chapter is designed to explain the economy of Jordan, the Jordanian banking and financial system, and the development of the Amman Stock Exchange in more detail.

2.1 Overview

Jordan is a small developing Arab country that is located in the heart of the Middle East region. However, in spite of its central location and exportation activities[1], the economy of Jordan was classified as one of the smallest economies in the region (MAHFAZA, 2014). This economy heavily depends on the performance of the Amman Stock Exchange and the

[1] It is considered as the "third largest exporter of metal and phosphate mines in the world".

Jordanian banking sector. For instance, the latest statistics reveal that the market capitalisation of the Amman Stock Exchange contributes in the country's GDP by 75% in 1999 compared with 289% in 2007 and 150% in 2009. On the other hand, the banking sector[2] contributes in the GDP by 2.8% in 1999, compared with 6.6% and 7.2% in 2007 and 2009, respectively (ASE, 2014; JSC, 2014; DOS, 2014).

In addition, to cover the budget deficit, the economy of Jordan highly relies on remittances and foreign grants. For instance, UNICEF (2009) reports that among other MENA region's countries, in 2007 Jordan was categorized as the second-highest receiver of workers' remittances, with a total amount of $439 million by the end of 2007. See table 2.1 in appendix A, p. 424, for the contribution of foreign grants and remittances in the economy of Jordan.

Furthermore, it was observed that foreign investors prefer to put Jordan on the map of future opportunities. In this context, the ASE (2014) reports that there are many reasons contribute in motivating foreign investors to invest in Jordan. These reasons include the unique and strategic location. The stable political environment, free market orientated economy, taxes exemptions and the access to major global markets. The qualified and challenging human resources, high quality of life, attractive investment atmosphere and world class infrastructure and communications. In addition, Al-Zu'bi (2013) mentioned that there are five motivations encourage investors to invest in Jordan. These factors are shown in the following figure 2:

[2] It represents 94% of the financial sector.

Chapter Two: The Economy of Jordan

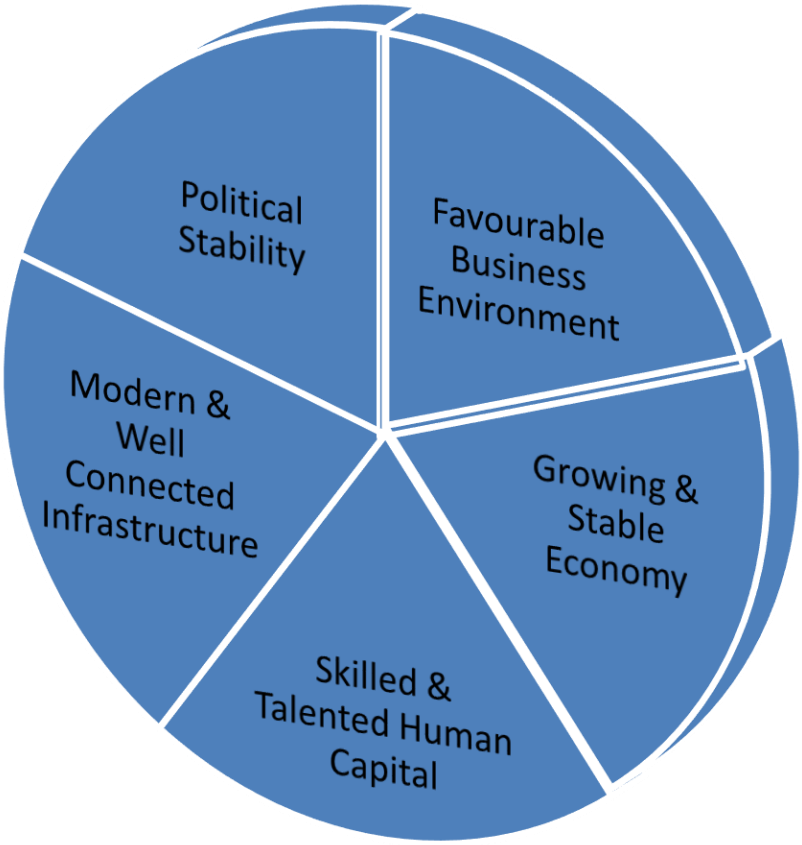

Figure2: Why to Invest in Jordan?

2.2 Jordanian Financial System

In Jordan, the financial system encompasses the Central Bank of Jordan, the Amman Stock Exchange and the banking and financial sector. This sector consists of a set of local and foreign commercial and Islamic banks, insurance companies and other credit institutions. However, since Jordan is a bank-based system, the banking sector is characterised as the main source to finance economic growth and development (Quandah, 2012). See table 2.2 in appendix A, p. 425, for the contribution of the Jordanian banking sector in the economy of Jordan.

However, due to the recession period in the mid-1980s, the financial system of Jordan has witnessed an unstable financial environment resulted in the collapsing of the Bank of Petra[3]. Thus, to strengthen this sector, the Central Bank of Jordan and the other financial authorities implemented a set of economic and financial reforms. Consequently, compared with the MENA region countries, the economy of Jordan was ranked as the highest financial development in all areas (IMF, 2003). Continually, in 2004 the CBJ allowed the entry of new banks to the existing banking sector[4]. Thereby, during the period 2009-11, the number of the operated was banks increased from 23 to 26 commercial and Islamic local and foreign banks (Quandah, 2012; Jodinvest, 2012). See diagram 2.1 in appendix A, p. 426, for the size of the Jordanian banking sector.

[3] It was one of the major banks in Jordan.

[4] This action encouraged the Jordanian licensed banks to integrate via mergers or acquisitions. This step was achieved through raising the minimum paid-up capital's requirement for domestic banks from JOD50 to 100 million (Jodinvest, 2012).

Moreover, since the growth in this sector was surged ahead, the performance of the Jordanian banks has experienced a dramatic increase in total assets. For instance, through the first of Jan/ 1990 to the end of Dec/ 2014, these assets rose from JOD 4090 million to JOD 44868 million. Furthermore, in the first of Jan/ 2013, the CBJ reports that around 56.8% of licensed banks' deposits are placed in the form of time deposits accounts. During the last three decades, the value of these deposits rocketed from JOD 1781 million in the first of Jan/ 1990 to JOD 17085 million by the end of Dec/ 2014 (Al-Tarawneh, 2014; CBJ 2015). For the amounts of the time deposits, which are held by the Jordanian banks over the period 1990-2014, see table 2.3 in appendix A, p. 428.

2.2.1 Central Bank of Jordan

It is a public bank established by the end of Dec/ 1950, while its operational procedures were launched by the first of Oct/1964. This public institution enjoys a status of an autonomous and independent corporate body. The capital of CBJ that is thoroughly owned by the government of Jordan was increased from $1408450 to $25352112 million. During the period 1993-2013, the total value of foreign reserves rose from $588 million in 1993 to $12005.700 million. However, since the CBJ is the only responsible for regulating the monetary policy of Jordan, it concerns of maintaining the monetary stability of the kingdom of Jordan and ensuring the convertibility of the local currency (JOD). Additionally, this authority also aims to promote the sustained economic, in accordance with the general economic policy of Jordanian government[5] (CBJ, 2015).

[5] http://www.cbj.gov.jo/pages.php?menu_id=2

In line with the above discussion, during the 2007/8 crisis period, the CBJ implemented a set of actions to protect the banking sector from the challenges of this crisis. For example, the CBJ imposed a set of restrictions on overdrafts. It facilitated the conditions of debt re-structuring and real estate collaterals. It eases the minimum cash requirements to provide this sector by the needed liquidity. In addition, during the same period, the government of Jordan promised to ensure banks' deposits without limits, until the 2010 period. This action resulted in reflecting a robust financial position throughout the banking sector. Consequently, the total deposits of Jordanian licensed banks surged from JOD 10618 million in 2007 to JOD 17617 million in the end of Dec/ 2010. The total assets increased to JODs 34973 million in 2010 compared with 26816 million in 2007 (CBJ, 2015).

2.2.2 Determinants of Banks' Liquidity

According to the BIS (2008) the term 'banks liquidity' relates to banks' capacity to finance the increases in assets and meet banks' obligations when they come due, without incurring unacceptable losses. As mentioned by Vodova (2011a, 2013) there are many factors affecting banks' liquidity, these factors are mentioned as shown in figure 3:

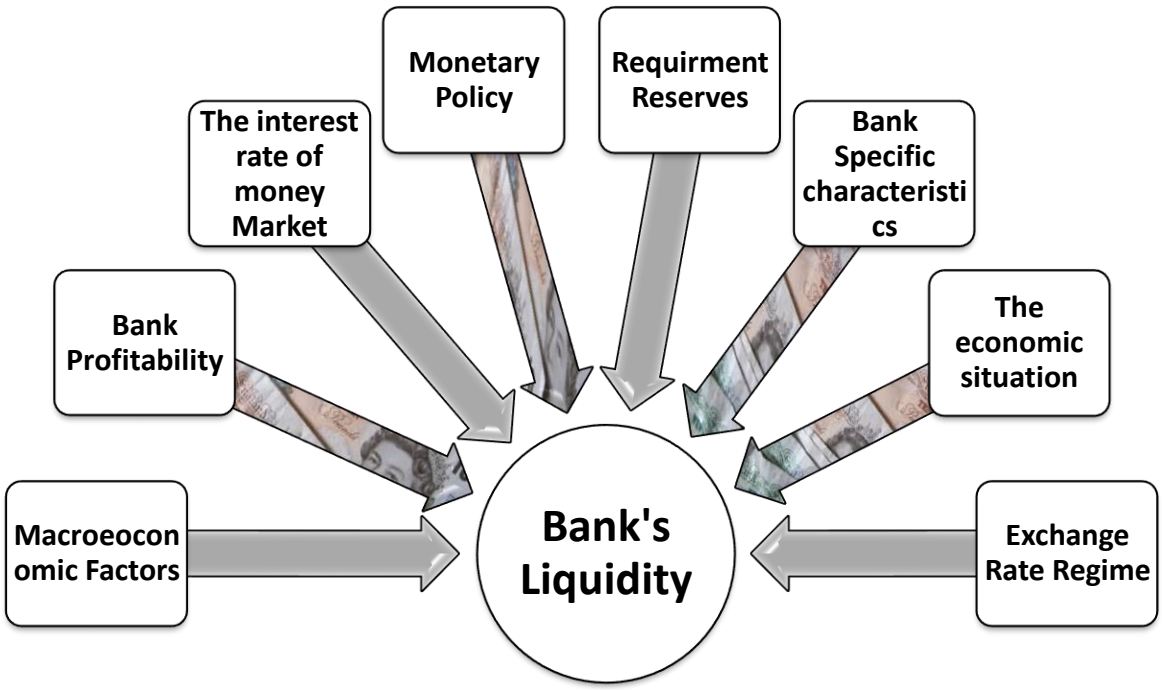

Figure 3: Determinants of Banks' Liquidity

2.2.3 Monetary Policy

This policy is mainly used to monitor the supply of money and the levels of interest rates. Therefore, it represents one of the most important elements of economic system. Soufan (2013) mentions that the monetary policies mainly aim to organise the supply of money, through using appropriate measures. These measures are taken by monetary authorities[6] as represented by central banks. The power of these authorities shows the ability of central

[6] These authorities encompass central banks, and certain functions usually attributed to these banks. However, some of these functions can also be performed by other government entities (e.g. government owned commercial banks).

banks to increase or decrease volumes of money in the banking system. Accordingly, the central banks can monitor the volumes of money directly or indirectly[7] (Soufan, 2013).

In Jordan, the monetary policy is primarily monitored by the Central Bank of Jordan. The CBJ attempts to promote substantial growth through controlling the rates of inflation. However, during the period 1970s-80s, the CBJ followed a tight monetary policy and issued many directives to monitor the activities of Jordanian banks and domestic liquidity. These directives focused on determining minimum and maximum interest rates on various types of deposits and loans, employing the ratio of required reserves to motivate specific activities[8]. In addition, the CBJ forced the banks of Jordan to employ a certain minimum percentage of their total assets in TBs as well as it compelled various restrictions on foreign exchange's transactions (Mousa, 2010).

However, during the second half until the late of 1980s, the country witnessed a stagnant economy due to the decrease in the amounts of foreign aids and workers' remittances. As a result the volumes of external debt were surged ahead. Thus, to manage the projected decrease in grants, the IMF recommends the CBJ to adopt a tight policy, in a manner ensures protecting the gains, which are achieved in the areas of macroeconomic stability (IMF, 2005). To achieve that the CBJ put some regulations on credit facilities and committed the banking sector to retain 35% of their foreign reserves as required reserves in the

[7] This policy aims to influence the total amounts of cash reserves which are available in banking system and the total volume of bank's loans and investments. That can be done through the discount rate, required reserve and open market operations (Soufan, 2013).
[8] These activities including monitoring the supply of money and protecting the stability of banking sector (CBJ, 2014).

form of time deposits (CBJ, 1989). Consequently, by the end of 1988, CBJ Jordan succeeded in raising the amounts of aids and remittances by 11% and 8.5% respectively. In addition, the M2 increased by a relatively low average growth rate of 10% compared with the previous year (CBJ, 1989).

Furthermore, in the beginning of the 1990s, the CBJ cooperated with the IMF to enhance the performance of monetary policy and its effect on banks' liquidity. To achieve that the CBJ put a set of reforms aimed to improve the national payment system. Deepening the financial market and strengthening the Jordanian banking system. However, to bring the reporting practices of CBJ to the international standards, the IMF helped Jordan technically to enhance the supervision's capacity of CBJ. Accordingly, the CBJ shifted its monetary operations from the direct policy [9] to market-based indirect instruments. This new policy was conducted through unleashing the restrictions which are imposed on foreign exchange transactions and liberalizing the factor of interest rates. Regarding the discount rate and the ratio of required reserves, CBJ relied on the open market operations. However, to monitor the money supply efficiently or restraining the inflationary impacts of the 1988-89 crises. In 1993, the CBJ pushed the ratio of required reserve to 15% and it started

[9] The direct control (quantitative and qualitative) was emerged during the Second World War and beyond. Through this policy, central banks will be able to determine the credit's volumes to affect certain sectors in the economy. The tools of this policy have a direct impact on creditors and borrowers simultaneously. In addition, they qualitatively and quantitatively impact the level of demand on loans and the ability of financial institutions to lend.

to influence the banking sector through issuing its special securities (CDs)[10] (Creane, et al., 2003; CBJ, 1993).

2.2.4 The History of the Jordanian Dinar

The first banknotes bearing the name of CBJ were put into circulation in August 1965. However, during the period 1927-50 the currency's issuance was monitored by the Palestinian currency board. This board used to issue the Palestinian pound as an official currency in Palestine and the trans-Jordan emirate. However, when Jordan became an independent kingdom on the 25th May 1946, the idea of issuing a national currency was seriously adopted. Thereafter, under the provisional act No. 35/1949, the currency board of Jordan was formed and it is started to issue its own currency. On the first day of July 1950, the currency board of Jordan issued the Jordanian Dinar by different notes[11]. Finally, on the 30th of September 1950, the government of Jordan stopped using the Palestinian pound as an official currency (CBJ, 2015)[12]. Although, this section focused on explaining the establishment phases of the local currency, the history of the JOD is crucial to understand the structure of the interest rate, since it is found to be effectively affected by the exchange rate regime. Therefore, the next section focuses on reviewing the exchange rate of the JOD. The exchange rate is considered to be important because not only it affects the purchasing power of the JOD or the supply and demand which in turns affect the levels of

[10]In Sep/1993, the Central Bank of Jordan issued certificate deposits within different maturities. These maturities extend from three to six months. However, the interest rates of these certificates are mainly determined through auctions (IMF, 2003 and CBJ, 1993).
[11]The Jordan Currency Board issued notes in the denominations of 0.5, 1, 5, 10 & 20 JOD.
[12]http://www.cbj.gov.jo/pages.php?menu_id=108&local_type=0&local_id=0&local_details=0&local_details1=0&localsite_branchname=CBJ

interest rates, but also the economy of Jordan as a whole. Therefore, the coming section explains the pegging system of the Jordanian Dinar with other currencies.

2.2.5 The Exchange Rate of the Jordanian Dinar

As a part of the colonial legacy, in the 1950s, the CBJ pegged the JOD with the GBP at a rate of 1 GBP/ 1 JOD. However, due to the devaluation of the GBP in 1967, this regime was officially abolished and replaced by the USD at a rate of $2.8 per one dinar. Thereafter, this pegging was abandoned due to the breakdown of Bretton Woods's system [13] by the late of 1971 (Maziad, 2009; CBJ, 1989).

During the period 1976-86, the JOD was pegged with the SDRs[14], at an exchange rate of SDRs 2.57895 for each Dinar. The volatility margin of this pegging averaged around ± 2.25%. This system has experienced a stability backed by huge amounts of workers' remittances. However, in the mid of 1980s, the appreciating of the real exchange rate increased the prices of the Jordanian's products in front of the foreign commodities. Consequently, the deficit of the trade balance was expanded and the amounts of foreign reserves were diminished dramatically. Furthermore, the decline in workers' remittances, foreign grants, the collapse of oil prices and the pressures on the balance of payment supported the Jordanian authorities to float the rate of the dinar currency. Following the effective float-

[13] Is an agreement held at Bretton Woods in 1944 encompasses forty-four allied countries. The conference aims at stabilising the rates of exchange rates via linking the currencies of the meeting's parties with the USD, and indirectly with gold at an exchange rate of $35 per ounce (Apps & Goacher, 1996, p. 260).

[14] The special drawing rights are a form of international money that is established by the end of 1960 with an exchange rate of 1 SDR/ $1 (Apps and Goacher, 1996, p. 260).

ing and the significant depreciation in the Jordanian dinar in the late of 1988, the exchange rate's policy was characterized as one of the well "managed flexibility".

In Feb/1989, the Jordanian dinar was pegged back to the USD. In this phase, the Jordanian authorities degraded the exchange rate of each JOD to be 1.76 USD, compared with $2.8/ 1JOD in 1967. However, due to the expansion of the 1989 crisis[15], in May/1989 the Jordanian authorities stabilised the economy of Jordan by replacing the USD's regime by a basket of currencies. However, by end of Jul/1989, the currency board of Jordan implemented a dual exchange rate. This policy has been cut down and the JOD was pegged again to a basket of currencies[16]. Eventually, in Oct/1995, the local currency was pegged with the USD at a fixed rate equals $1.4/1JOD (Altarawneh, 2012; CBJ, 2015). See chart 2.1 in appendix A, p. 430, for the historical trends of the exchange rates of the JOD with the USD, over the period 1973-2013.

[15] During the period 1983-87, the decline in oil prices decreased the amounts of workers' remittances and Arab grants to Jordan. Subsequently, that resulted in expanding the deficit of the current account by 5.2% of GDP. Thereby, the average size of investment declined to 25.3 % of GDP. Thus, the decline in remittances and the Gulf war in 1990 resulted in collapsing the exchange rate of JOD as well as the GDP growth rate declined by 2% during the period 1988-1991. In addition, the expansion of fiscal deficit and the increasing in debt service ratio by 45.4% of exports in 1989, the government forced to cover its deficit through borrowing. Eventually, the inflation rate increased to 13.5% in 1988, and the amount of investment slumped to 22.7% as a percentage of GDP for the same year (Soufan, 2013).

[16] The currency crisis depreciated the exchange rate of JOD against the SDRs by 65% in 1988 and additional 33% in 1989. However, in the 1990s the JOD was pegged with the SDRs at 0.94/SDRs (Maziad, 2009).

2.2.6 Interest Rates

During the period 1980s, the CBJ set a fixed interest rate structure to be operated in the financial system of Jordan. However, in a response to the developments of international and local financial markets, in the late of 1980s[17], the CBJ and the Jordanian government agreed to improve the efficiency of the current financial sector through initiating a set of financial reforms. Thus, in the early of 1990s, the CBJ started to moderate its authority over the factor of interest rate. Subsequently, the interest rates on deposits and loans were totally liberalized. In 1993, CBJ aimed to keep interest rates high, to stabilize the local currency and strengthen the component of foreign reserves. To achieve that the CBJ replaced the direct instruments policy by issuing certificates of deposit[18]. These deposits got a freedom to be determined through the forces of supply and demand. Thereafter, the interest rate of these certificates becomes as a general indication for the direction of banks' interest rates. However, the interest rates on the three months CDs increased from 3.25% to 4.1% and for six months increased from 5.750% to 5.867% in 1993 and 2007, respectively (IMF, 2009; Quaider, 2008; Alawin and Al-S'ad, 2013).

In the period 2007 towards the first half of the 2008, the fluctuation in the time deposit interest rates was relatively stable. However, during the crisis period, these rates fluctuat-

[17] In this period, the deposits' interest rates increased, compared with the period of seventies. However, in 1988 the interest rates started to be determined by the forces of supply and demand. This contributed in tightening the gap between the inflation rates and the rates of interest. Consequently, that helped the financial sector in the process of luring savings and converting them to loans to the different sectors to invest in several projects (Soufan, 2013).

[18] CBJ issues these certificates to influence the market interest rate.

ed dramatically. Thus, to protect the banks of Jordan from the challenges of the 2007/8 financial crisis, in 2009, the CBJ reduced the deposits' interest rates three times[19], while it kept the interest rates on credit facilities relatively high. Consequently, this policy not only declined the growth of credit facilities, but it also affected the confidence of the investing public in the official currency and the liquidity of banks. Thus, to recover the confidence of the investing public, in 2012, the CBJ raised the levels of interest rates three times. Consequently, at the end of 2012, the share of deposits as denominated by the JOD rose by 71% compared with 66% in 2007. However, through adopting an accommodative monetary policy in 2013, the CBJ cut the rates of interest twice and once in 2014, and it is expected to keep them low in order to stimulate the domestic demands and spur economic growth, through expanding the credit of private sector (Bank Audi, 2014; Jodinvest, 2012).

Furthermore, Al-Husami (2013) mentioned that due to the fixed exchange rate between the JOD and the USD, there is a positive relationship between the interest rate on the USD and the rates on the JOD. In addition, the interest rates in Jordan are significantly affected by factors like the volumes of foreign grants, external borrowing, monetary policy, political events in neighbouring countries and workers' remittances. Thus, since the latest financial crisis decreased the amounts of remittances and foreign grants, it is imperative to examine the impact of interest rates on investor's decisions. Henri (2004) confirms that the interest rates on the USD are considered as the most influential factor on the levels of

[19] The first cut was fifty points, the second was 150% and then 25% points in 2010 (Jordinvest, 2012).

interest rates in Jordan. See the following figure (4) for the trends of the interest rates on the JOD and the rates on the USD.

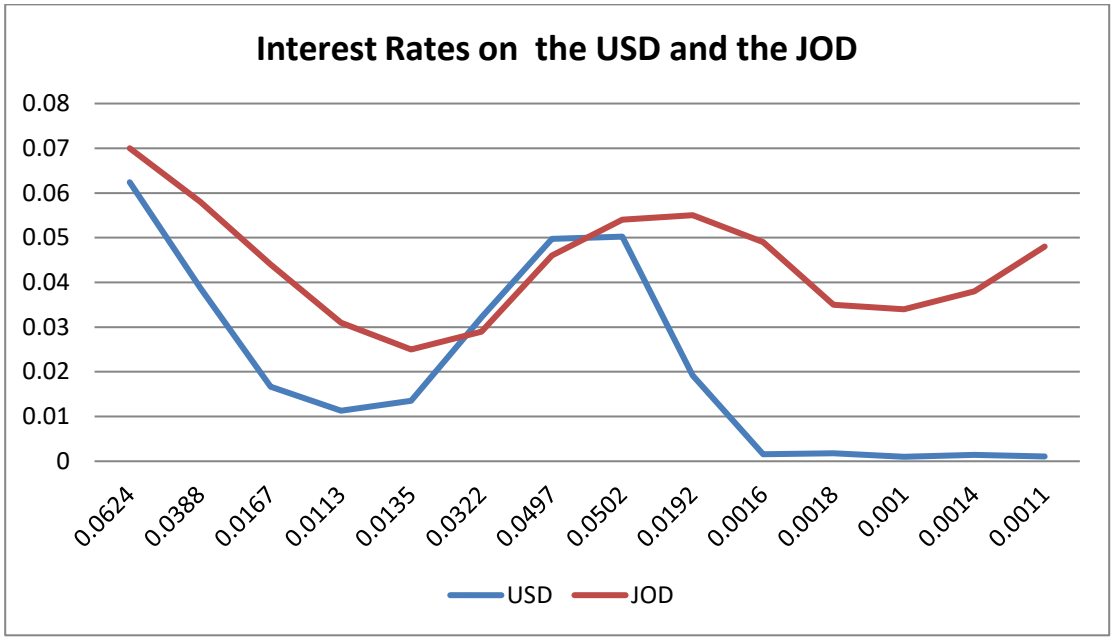

Figure 4: The interest rates on USD versus the interest rates on JOD over the period 2000-13 (Fxtop, 2015).

To some extent, the above chart shows a positive correlation between the interest rates on the JOD and the rates of the USD. In this context, Alawin and Al-S'ad (2013) report that the interest rates on the JOD are positively correlated with the rates on the USD. For instance, due to the 9/11 terrorist attack, the U.S. Federal agency lowered the rates of interest nine times. Thus, to boost the economy of Jordan and keep it up with the global monetary developments and motivate the domestic demand, the CBJ reduced the levels of interest rates five times. However, in 2004, the interest rates in Jordan started to go up in a response to the American Federal agency as it raised the rates on USD in the same period (Jordinvest, 2012).

2.2.7 The Development of Interest Rates' Structure

In the second half of the 1990s towards the first half of 2004, the weighted average time deposits interest rates decreased apparently. Nevertheless, by the end of the 2004, these rates started to increase gradually. However, the largest increase in these rates is observed to be for the time deposits interest rates[20]. These rates increased from 2.49% in 2004 to 4.11% by the end of 2014. Consequently, that led to a remarkable increase in the total value of time deposits. However, during the period 1990-2004, the weighted average interest rate on loans and advances decreased from 10.51% in 1990 to 7.59% by the late of 2004. Thereafter, it increased from 7.59% to 8.84% by the end of 2014 (CBJ, 2015)[21] . However, the volatility in the interest rates of the saving and the demand accounts is found to be slight. See charts 2.2 and 2.3 in appendix A, p. 431-432, for the levels of interest rates on time deposit and the loans and advances, as well as table 2.7 in appendix A, p. 450 for the interest rates on the saving and demand deposit accounts.

According to the CBJ law number 56/2012[22], it is not allowed for banks to raise interest rates. However, if they did, the change in the interest rate must be linked with the change in one of the interest rate's indicators[23] (CBJ, 2012). Moreover, there are many factors

[20]According to Al-Omour, Al-Alaween & Al-Hasreh, (2013), the weighted average time deposit interest rates in Jordan are positively impacted by the country budget deficit. For example, when the government enters the money market to recover its deficit that will increase the demand on money.
[21]http://statisticaldb.cbj.gov.jo/index?action=level3&dbName=tab5571&cat_id=19
[22]Instructions of Treating Customers Fairly No. 56/2012 dated 31/10/2012
[23]Monetary policy instruments announced by the CBJ or interest rates on treasury bills or JODIBOR (the Jordan inter-bank offered rate).

contribute in affecting the levels of interest rates in Jordan. These factors are summarized as shown in figure 5:

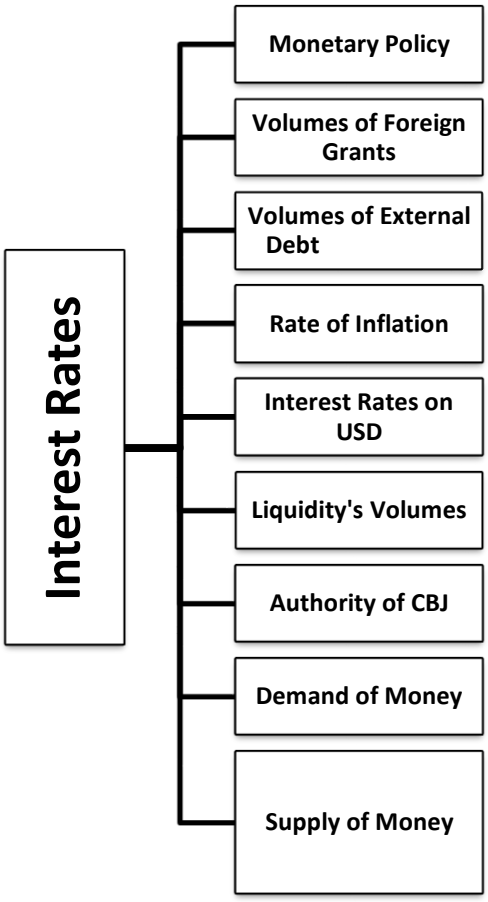

Figure 5: Determinants of the Interest Rates on the JOD[24]

The above figure shows that there are many factors affecting the levels of interest rates on the Jordanian dinar. For instance, an increase in the supply of funds leads to a decrease in the levels of interest rates. By contrast, the increase in demands leads to increase the inter-

[24] Al-Omour, Al-Alaween & Al-Hasreh (2013); CBJ (2015).

est rates on the JOD as well as increasing the cost of funds (CBJ, 2015). The above figure also illustrates that monetary policies and money authorities like the CBJ are significantly affecting the levels of interest rates. For example, if the central bank adopts tight monetary policies, this would negatively harm the growth rate of money supply, due to the higher interest rates. Consequently, that will reduce the supply of funds which are needed for expansion's purposes (CBJ, 2015; Reilly and Brown, 2006, p. 361 and 362, Canadian security course, 2013). By contrast, when the CBJ follows smooth policies that will lead to increase the demands of funds and subsequently that will significantly impacting economic growth activity. Furthermore, the increase in the liquidity in the financial system normally leads to decrease the levels of interest rates, due to the availability of loanable funds in the banking system of Jordan. On the other hand, factors like external debt are found to have a positive effect on the levels of interest rates, due to the tight policies which will be adopted by the CBJ in order to support saving and decreasing the credit activities (CBJ, 2015). However, in Jordan, when the inflation rates go up and decrease the purchasing power of the JOD, the CBJ tend to raise the levels of interest rates in order to slow down the economy. Thereby, the inflation rate will be decreased or stabilized (Nasser, 2010).However, since the levels of interest rates in Jordan are significantly impacted by factors like the volumes of liquidity and the interest rates on the USD, the following two figures 6-7 summarise the most influencing factors on the liquidity volumes and the US dollar.

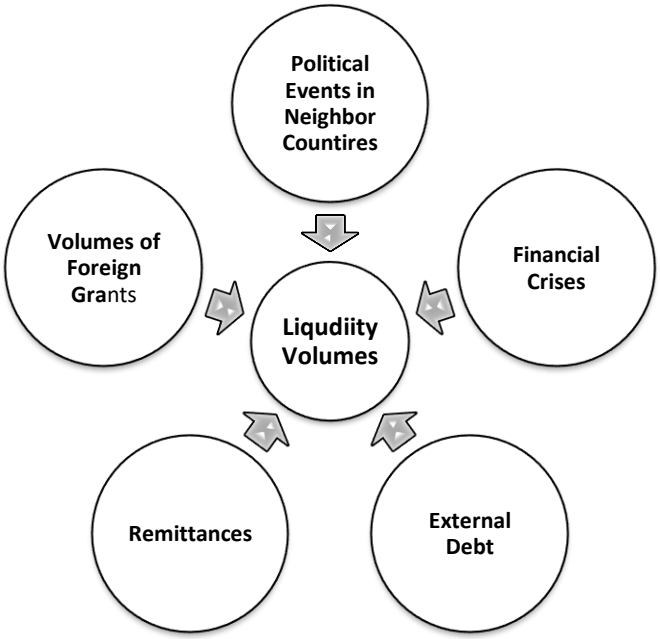

Figure 6: Determinants of the liquidity in the Jordanian Financial System[25]

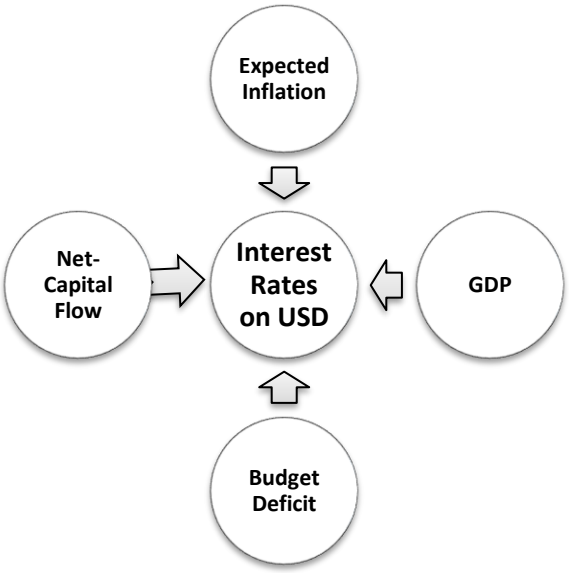

Figure 7: Determinants of Interest Rates on USD[26]

[25] Al-Omour, Al-Alaween and Al-Hasreh (2013)

[26] Konadu-Adjei, Mayer & Chien **(**2012).

Chapter Two: The Economy of Jordan

2.3 The Development of Amman Stock Exchange

The Amman Stock Exchange is the extension of the Amman financial market that was established in 1976. According to the legislation of the temporary securities law number 23/1997, in 1999 the ASE was founded as an independent non-profit organisation that is managed by the private sector. Thereafter, under the authority of the board of directors[27], this organisation got the permission to operate as a regulated market for trading securities in Jordan. Thus, to facilitate the trading process, the stock exchange permitted a set of licensed brokerages firms. These firms aimed to match investors' needs and providing them with beneficial financial advices.

In addition, as a formal market, the ASE focused on strengthening the principles of fair trading and protecting domestic and foreign investors. It is also aimed to provide a suitable investment environment for trading securities. To achieve these objectives, it was necessary to restructure and regulate the capital market to meet the international standards. For this purpose, the ASE promoted international electronic trading systems, and specialized halls those are equipped with modern technological tools. Moreover, the development of ASE has passed several stages before reaching its current position. These stages are shown in figure 8 (ASE, 2015).

[27]Consists of seven members and an executive director.

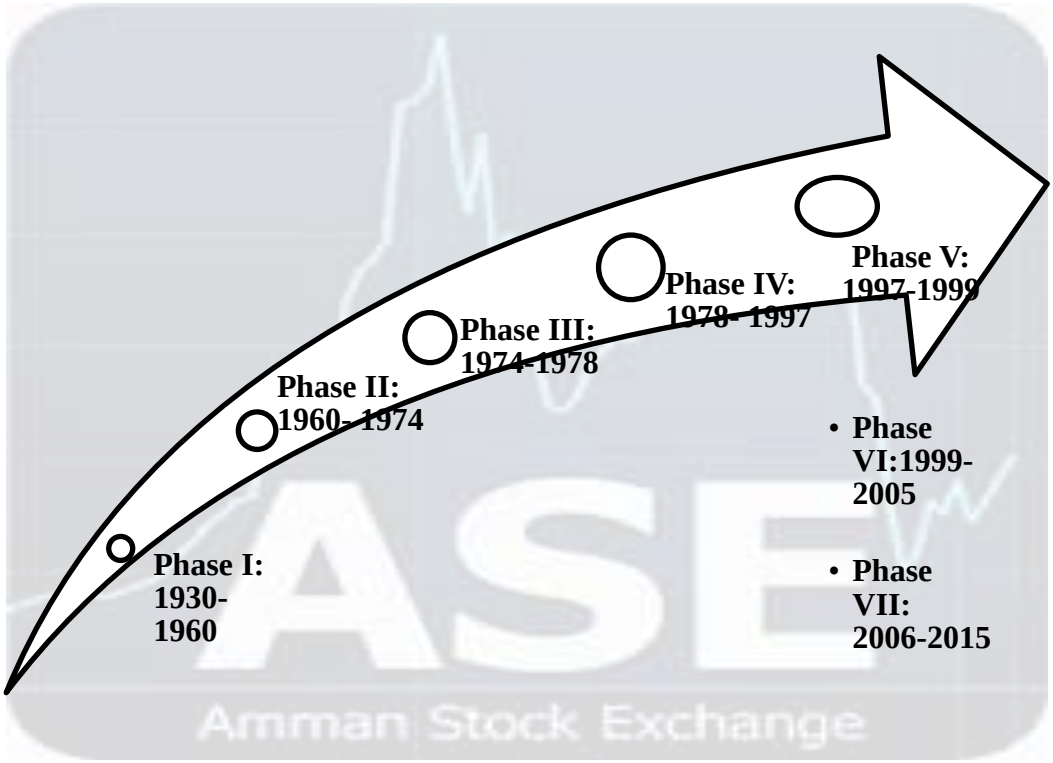

Figure 8: The Development Stages of the ASE (ASE. 2015)

- **Phase I: 1930-1960**

This period witnessed the establishment of a limited number of Jordanian public shareholding companies[28]. The shares of these companies started to be traded a long time before setting the Jordanian securities market. This action motivated the investing public to participate in underwriting and trading the securities of these companies.

[28] The Arab Bank as the first Jordanian public shareholding company is established in the early of 1930, followed by Jordanian Tobacco and cigarettes companies in 1931, the Jordanian Electric Power Company in 1938 and then by the Jordan Cement Factories in 1951.

- **Phase II: 1960 – 1974**

The companies of the first phase, started to issue corporate bonds through an unorganised market. Therefore, to ensure the safety of dealing with securities and protect the class of small savers, the government of Jordan decided to establish an organised market.

- **Phase III: 1974-1978**

This period experienced a considerable increase in the number of Jordanian public share-holding companies. The number of these companies increased from 4 companies in the first phase to 66 by the end of 1978. However, to correct the imbalance in second phase, through cooperating with the World Bank's and the IFC[29], the Central Bank of Jordan carried out intensive studies. Consequently, the results revealed that the size of the national economy and the contribution of private sectors justified such a step. Eventually, under the temporary securities law number 31/1976, what was known as Amman Financial Market was consequently established[30]. Thereafter, in 16th of Mar/1977, a cabinet resolution set up the administration committee of the Amman Financial Market.

- **Phase IV: 1978-1997**

Although the cabinet resolution of the 16th/Mar/1977 set up the administration committee of the Amman Financial Market, however, the committee started its operation on the first

[29] International Finance Corporation.
[30] The former name for the ASE

of Jan/1978. This committee aimed to organise the issuance of the financial securities as well as facilitates the process of mobilizing the national savings efficiently. Thus, to enhance the process of issuing securities, in 1997, what is known as the Jordanian securities commission was formally established.

- **Phase V: 1997- 1999**

In 1997 and under the legislation of the temporary securities' law number 23/1997, the Government of Jordan conducted comprehensive reforms for the capital market. These reforms aimed to support the private sector and diversifying the national economy. Additionally, improving the regulation of the securities market that to be qualified to the international standards. For this purpose, the government focused on restructuring the capital market through using an international electronic trading system, clearance and settlement systems. Furthermore, it also strengthened the process of controlling the operations of the capital market to provide high levels of transparency and disclosure.

These reforms resulted in increasing the traded value in the AFM from JOD 5,615,891 in 1978 to JOD 389 million by the end of 1999. The market capitalisation rocketed from JOD 286 million in 1978 to JOD 4 billion in 1999. In addition, the number of transaction rose from 8,297 in 1978 to 155 thousands in 1999. Moreover, since this period witnessed incredible improvement in the performance of the AFM, the securities law of 11/Mar/1999 aimed to replace the AFM by three main institutions, namely ASE, JSC and SDC (ASE, 2014). These institutions are explained in next the section of this chapter.

- **Phase VI: 1999-2005**

During this period, the Jordanian TV granted the ASE permission to announce the most influential factors on securities' prices. In addition, for the aim of meeting the needs of local and foreign investors, an agreement with the Bloomberg's company was signed. However, due to the decline in deposit interest rates in 2004, many local and foreign investors become interested in the ASE. Subsequently, that led to increase the number of transactions, turnover ratio, value traded and the trading volume. Therefore, the nature of this relationship motivates the current research to investigate whether or not there is a negative correlation between the TDIR and the decisions of Jordanian investors as measured by the market's liquidity. See charts 2.4- 2.7 in appendix A, p. 434-437, for the amounts of the number of transactions, turnover ratio, value traded and the trading volume in the ASE.

- **Phase VII: 2006-2015**

At the end of 2006, the ASE conducted an agreement with the Dow Jones index. In 2008, the ASE signed a contract with Atos-Euronext market solutions and the GL trade by €2.5 million. During the period 2006-2009, the institutions of Jordan capital market decided to launch a new trading system. In 2009, the new project was officially launched. This project comprises the new electronic trading NSC V900, surveillance and Depository systems. Consequently, in the first trading session 12534 transactions worth JOD59.9 million were executed. During the period 2006-2014 the number of the listed companies increased

from 227 to 233. The chief executive officer said that the ASE achieved positive indicators despite the Arab spring crisis. During the period 2011-2015 non-Jordanian investors entered the market, which are a testimony of trust in the ASE and an evidence of the increasing interest of investing in the ASE. The value of shares purchased by non-Jordanians increased from JOD 31.4 million in 2011 to 43.5 by the end of 2015. However, the financial crisis was negatively affected the performance of ASE. In 2008 the ASE index decreased by (24.9%) reaching (2758) points, compared with (3675) points by the end of 2007.

2.4 The Structure of the Jordanian Financial Market

According to the securities' law of 11/Mar/1999, the AFM was replaced by three main institutions. These institutions are described below:

- **Amman Stock Exchange**

This institution is defined as a regulated framework through which investors buy and sell securities through a set of licensed brokerage firms. However, according to the article No. 65 of the securities' law number 76/2002, the ASE was established as a non-profit institution with a full financial and administrative independence market. Accordingly, it has the right to own both movable and immovable funds and to do all necessary legal actions to

achieve its main objectives[31]. Furthermore, the stock exchange must have the right to execute all sales and purchases contracts as well as appoint a lawyer to represent it in the judicial proceedings (ASE, 2014)[32]. See table 2.5, in Appendix A, p. 439, for the licensed brokerage firms in the ASE.

- **Jordan Securities Commission**

It was established in 1997, as a public non-profit institution with financial and administrative autonomy. This institution has a board of commissioners consisting of five members and it is directly linked to the prime minister of Jordan. The major aims of this entity are to grant permissions issued under the law, drawing up draft laws and regulations on securities, as well as determine the limits of commissions for financial services companies and the members of the securities depository centre (JSC, 2014). In the appendix A, p. 445, see table 2.6 for the trading commissions in the ASE.

[31] Create an attractive and safe investment's environment, develop the process of trading securities, meet the international standards, and enhance the process of transparency and credibility as well as increase the investment awareness of all segments of the society.

[32] http://www.ase.com.jo/en/about-ase

- **Securities Depository Centre**

It is a non-profit legal entity with a financial and administrative autonomy, managed by the private sector. The main functions of this institution are transferring securities' ownership and deposit them, registration of securities as well as settling the prices of these securities between brokers (SDC, 2014).

2.4.1 The Segmentations of Amman Stock Exchange

The main markets of the ASE are described below[33]:

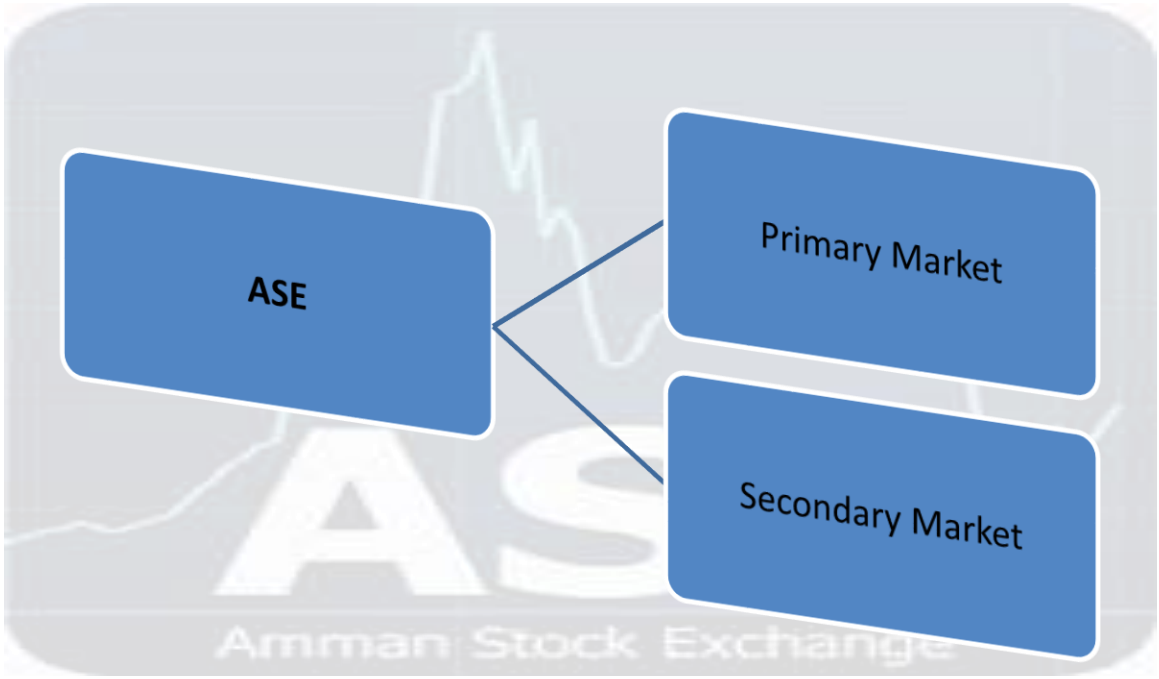

Figure 9: Segmentations of the ASE (ASE, 2015).

[33]ASE Market's Segmentations (2015).

2.4.2 The Primary Market

All firms enter this market to raise funds for expansion or establishment purposes. In other words, these firms choose to finance their needs through issuing new financial instruments, such as stocks and bonds. The issuer firms can issue securities either privately[34] or publicly[35]. Thus, once the issuance has been done, the securities can be transferred to the initial buyers directly or indirectly. In the direct method, the initial buyer buys securities from the issuer. On the other hand, these securities can be bought through financial intermediaries such as investment banks or by government agencies like central banks and municipalities (Mishkin, Matthews, and Giuliodori, 2013, p. 26; Bodie, Alex and Alan 2002, p. 65).

2.4.3 The Secondary Market

According to Al-Dahrawi (2012) this market is defined as a regulated framework through which the financial instruments, which are already issued in the primary market, can be traded according to a set of regulations and directives. These regulations are mainly determined by the Jordanian securities commission.

[34] Private offering (PO) in which firms raise capital through offering new financial securities to the available stockholders or a few wealthy investors.
[35] Initial public offerings (IPO) through which firms offer new financial securities to the general investing public.

2.4.4 Participants of ASE

The main question arising here is who are the main borrowers and lenders in financial markets? Indeed, the main problem in this approach is that a majority of participants have the right to play on both sides. For instance, commercial banks are able to enter these markets as borrowers through issuing bonds, or as lenders through buying the stocks of the other listed companies. Diagram 2.2 in appendix A, p. 447, illustrates the process of how funds' flow throughout the financial system. However, the following figure demonstrates the most familiar participants in the ASE.

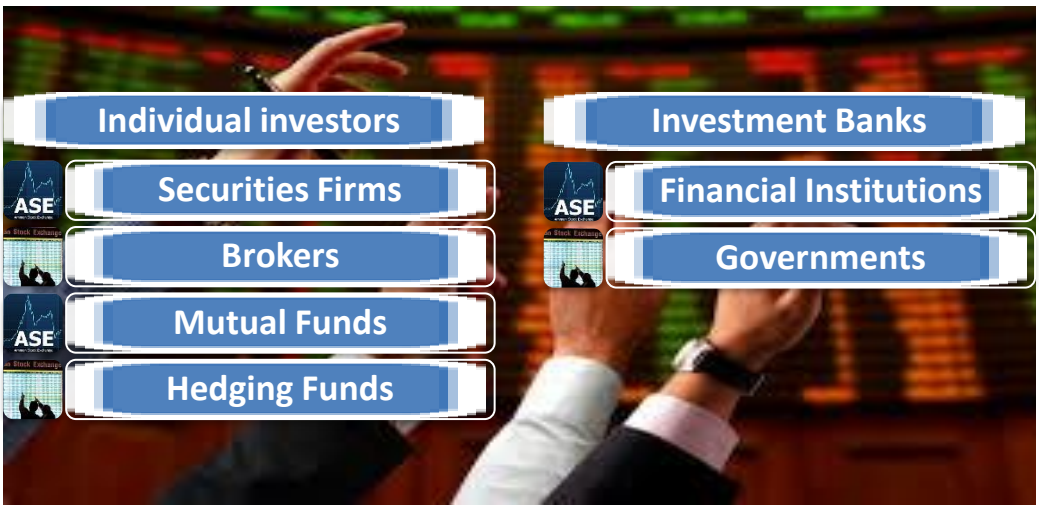

Figure 10: The main participants in the ASE (ASE, 2014)

The term 'individual investors' refers to all investors who consume less than they earn, securities firms are a set of companies enter the market for profits' purposes[36]. A broker is someone who purchases and sells securities on the behalf of others. Dealers or market

[36] These firms gain profits either through trading or helping others to trade securities.

makers[37] are specialised parties enter the market to generate profits via trading securities for their behalf. Mutual funds[38] are specialized financial organizations engaged in selling enormous financial instruments for investors. Hedging funds are financial organizations concerned with constructing pools of funds to trade in securities. Investment banks are independent wholesale banks that generate profits through providing advices, facilitating deals or helping firms in raising their funds.

Financial institutions are considered as the main participants of financial markets. However, the most familiar kinds of these institutions are commercial banks. These banks enter the market to generate profits, through trading securities. Pension funds enter the markets to create and manage large pools of financial assets, to be able to pay-out future income for retired workers. Insurance companies enter the market to generate more profits to be able to pay the outstanding insurance claims. Furthermore, nations' governments play a vital role in financial markets. These governments enter the market to achieve and monitor the supply of money through what's known open market operations as well as prohibiting the issued institutions from gypping investors[39]. Additionally, the governments enter the market to support competition, justifying the process of trading and ensuring the soundness of banking and financial systems (Ball, 2012, pp. 122-125; Fabozzi, Modigliani and Jones 2010, p. 13; Arnold, 2012, pp. 25 and 136).

[37] Since dealers hold huge inventory of financial instruments, they are considered as the buyer for the seller and the seller for the buyer.
[38] Investors prefer to invest in these funds in order diversify their risks.
[39] Issued institutions can gyp investors through concealing the relevant information.

2.4.5 The Traded Instruments in the ASE

The traded securities in the Amman Stock Exchange are discussed below[40]:

I. Common Stock

It is an equity security ensuring the ownership of residual claims on the firm's net income and assets, after it pays all of its obligations[41]. This type of stocks is characterized as a "residual claim and limited liability". Where the former means that in the cases of business failure, the stockholders will be the last set of investors who have a claim on the firms' net income and assets. On the other hand, the limited liability means that the stockholder is subject for the company's debts based on the amount of his own shares (Bodie, Alex and Alan 2002, p. 44).

II. Bond

It is a long-term debt instrument, issued by governments, public shareholding companies and official public institutions or municipal to borrow money from the investing public. At the maturity date, the bond's issuer agrees to make a predetermined future's payments encompasses the borrowed amount plus the coupon rate (Arnold, 2012, p. 221). See chart 2.8 in appendix A, p. 448, for the number of the traded bonds in the ASE.

[40] Listed Securities: http://194.165.154.66/en/node
[41] Such as the right of bonds' holders, bank's loans and other creditors.

2.4.6 ASE Major Indices

ASE indices are used to describe the patterns of stock price volatility, and evaluating the stock exchange performance in terms of returns. Back in 1980, the AFM constructed an Un-weighted Price Index supplemented by sub-indices for the four sectors: banking and finance companies, insurance, industrial and services' sector. At that time 38 stocks were covered and a base value of 100 was stipulated on the opening session of Jan/1980 for the Un-weighted price Index. The base was changed to 1000 as of Jan/2004. As a result of an intensive statistical study, in 1992, the financial market started to calculate a *market* capitalization weighted price index covering 50 stocks increased to 60 stocks in 1994, 70 and 100, in 2001 and 2007, respectively. A base value of 100 points in 1991 was stipulated for the Weighted Price Index. The base was changed to 1000 as of Jan/2004.

Moreover, due to the development in the domain of indices calculation, the ASE constructed a new index that is based on free float shares. This index is calculated by using the market value of the free float shares. This index encompasses the largest 100 companies. See table 2.4 in appendix A, p. 438, for the value traded of the main three sectors in the ASE.

2.5 Investors in the ASE and Investment Portfolios

The statistics of 2015 revealed that the total number of the traded companies in the ASE is 237 shareholding companies. These companies are divided into the three main sectors as shown in table one:

Table 2.1: Amman Stock Exchange's Main Sectors

The following table shows the key statistics of the main listed sectors in the ASE, over the period 2014.

Sector	No. of Companies	Trading Value in JOD	Percentage of the total traded companies %
Financial[42]	111	6,477,836	47
Industrial[43]	69	1,529,881	29
Services[44]	57	3,700,835	24
Total	237	11,708,552	100

Source: ASE (2014)

Moreover, investors in the ASE can invest in these sectors personally or through the assistance of financial advisors or brokerages companies. In addition, they can also trade in securities individually or through constructing investment portfolios (ASE, 2014). According to the size of investment portfolios, investors in the ASE are categorised as shown below:

[42] This sector encompasses 13 commercial and two Islamic banks, 24 insurance companies, 37 diversified financial services' companies and 35 real estate's corporation.
[43] It includes 6 pharmaceutical and medical industries, 10 chemical industries, 3 paper and cardboard industries, 1 printing and packaging industry, 11 food and beverages, 2 tobacco and cigarettes, 16 mining and extraction industries, 8 engineering and construction, 4 electrical industries, 6 textiles, leathers and clothing companies, as well as 2 glass and ceramic industries.
[44] This sector consists of 4 health care services, 6 educational services, 12 hotels and tourism, 12 transportation, 2 technology and communication, 2 media, 4 utilities and energy and 15 commercial services companies.

2.5.1 Individual Investors

This term refers to investors who employ the surplus of their funds in securities in an attempt to meet their future needs (Radcliffe, 1997, p. 5). According to Adel (2011, cited in Al-Rai newspaper, 2011), there are many factors influencing the market capitalization of the ASE. However, one of the most influential factors seems to be that a majority of individual investors in the ASE don't have specified investment objectives. In addition, they don't use financial ratios in the process of decision making. Therefore, he recommends investors to invest in stocks with market values lesser than book values.

2.5.2 Institutional Investors

The institutional investor is an investor manages a huge amount of funds. The mutual funds, investment banks, investment corporations, foundations, pension funds, and insurance firms are the best example for this type of investors (Boubakri and Cosset, 2011, p. 6). Institutional investors in Jordan encompass the public pension fund, mutual funds, insurance companies as well as banks.

As cited in Al-Rai newspaper (2011), Al-Anani recommends institutional investors of Jordan to compare a share's MV with its BV in order to make a rational investment's decisions. According to Alami (2009), the stock markets of Tunis and Morocco are dominated by institutional investors, whose market share is averaging around 30%. However, the type of Jordanian investors is unclear, though the country is known to have an active insti-

tutional sector. According to the ASE (2015) the performance of institutional investors in Jordan is described as shown in the following table (2.1):

Table 2.2: The Activity of Institutional Investors in the ASE

Relying on data availability, the following table reports the amounts of the investments assets of institutional investors in the ASE for the periods 2012 and 2013, the net profit for the 2013, and the contribution of institutional investors in the GDP for 2011 and 2013.

Investor	**Investment Assets**		**Net Profit**	**Contribution in the GDP %**	
	2012	2013	2013	2011	2013
Pension fund[45]	5 billion	6.113 Billion	291.4 Million	25.5	25
Banks[46]	39275 million	42803	719.5	4.26	3.1
Mutual funds	265	150	____	_____	_____ _
Insurance Com-	764	798	25.9 million	2.8	3

[45] This fund diversifies the largest amount of assets into main 5 investment portfolios. These portfolios include the bonds' portfolio that acquires a ratio of 34.9 of the total asset. The portfolio of money market's instruments and it constitutes 14.6, loans' portfolio with the ratio of 2.4%. The investment "stocks' portfolio with a ratio of 30.5%, and the portfolio of real estate's investments and it represent 6.4%" (SSC, 2014[45]).

[46] According to Musa and Abu-Orabi (2009) banks of Jordan focus on diversifying their assets in investment portfolio and fixed income securities to ensure the clients' capital.

panies[47]					

Source: SSC (2014); CBJ (2015); JIC (2012)[48].

2.5.3 Preferences of the Amman Stock Exchange's Investors

All people live their lives and view the world by relying on certain values and assumptions, which contribute in shaping their positions toward risks and returns. Therefore, the attitudes of the ASE's investors are explained below:

1. Risk-averse investors: according to this form investors only consider speculative prospects or risk-free with positive risk premium. In other words, investors seek the rate of returns to be larger than or equal the rate of inflation (Reilly and Brown, 2006, p. 46; Bodie, Alex and Alan 2002, p. 160). Authors, like Yamin and Ali (2014) found that ASE investors prefer to invest in securities with low market-to-book value ratio. Ali and Al-Hunaiti (2012) find that ASE's investors are risk averse as they prefer to invest in the market through using options contracts in an attempt to diversify their investments and hedging against risks.

2. Risk neutral investors: this attitude stipulates that investors prefer to invest in fixed return securities such as treasury bonds. In other words, investors of this position aim to generate fixed income rather than capital gains or appreciation (Reilly and Brown, 2006,

[47]Insurance companies such as Metlife Alico, Arab Orient Insurance (AALI) as well as Al-Nisr Al-Arabi adopt a conservative investment policy, while other companies prefer to invest in high risk assets including real estates and equities, whereas this risky mix encompasses 62% of the investment portfolio's total assets (Yaghmour, Masri and Kamhieh, 2011).

[48] http://www.jicjo.com/portals/portal1/Upload/Block/Image/En%20 Annual.pdf

p. 46; Bodie, Alex and Alan 2002, p. 160). During the recent financial crisis's period, a majority of Jordanian investors become more neutral against risks. For instance, they preferred to follow fixed investment strategies, through employing their funds in investment opportunities such as bonds and banks' deposits (MAHFAZA, 2014).

3. Risk seeker: investors of this type prefer to engage in 'fair games and gambles' to accelerate the growth rate of their portfolios. This attitude lies between the first and second attitudes. However, though the first category attempts to make a balance between risk and return, followers of this approach concern with returns more than risks (Bodie, et al., 2002, p. 160; Reilly and Brown, 2006, p. 46-49).

2.6 Investment Portfolios and Investment Strategies

The previous discussion revealed that it is important for investors to determine their investment needs before entering the market. Precisely, investors should decide whether they want to invest personally or by the help of an investment advisor. In addition, they must also determine the way of investing. For example, they can invest individually through selecting individual stocks or through constructing an investment portfolio. However, if the second way has been chosen, what's known as a policy statement[49] must be constructed (Reilly and Brown, 2006, p. 41; Radcliffe, 1997, p. 548). Similarly, the ASE's investors can invest personally or through the assistance of financial advisors and brokerages companies as well as they can trade securities individually or through constructing an

[49] It is a clear map for the journey of their investment portfolio.

investment portfolio (ASE, 2014). Moreover, the key question arising here is what do we mean by investment portfolios?

2.6.1 Investment portfolio

The term 'Investment Portfolio' is known as a combination of financial securities, physical assets and precious metals chosen by investors (Pike and Bill, 2003, p. 309 and p. 856). Investors construct portfolios to achieve a set of objectives those can be interpreted in terms of risk and returns (Reilly and Brown, 2006, p. 46). However, depending on the different attitudes towards risk and returns, investors manage their portfolios through adopting one of these following strategies:

I. Passive Strategy

It is known as a long-run 'buy and hold strategy'. Investors of this approach estimate to earn plausible future returns those are able to compensate them the degree of risk which they agreed to tolerate[50] (Radcliffe, 1997, p. 36; Reilly and Brown, 2006, p. 607-615). Reilly and Brown (2006, p. 612) state that to decrease the transaction's cost and the degree of risk, small investors tend to create their passive portfolios through purchasing shares in an exchange traded fund. In the ASE, investors can diversify their portfolios

[50] This strategy is relied on a theory assumes that financial markets are efficient (Reilly and Brown, 2006, p. 607-615).

through investing in the stock exchange weighted index[51] (ASE, 2014). In appendix A, p. 449, see chart 2.9 for the trend of the stock price index during the period 2000-13.

II. Active Strategy

Active investors or portfolio managers attempt to gain profits by out-performing the market[52]. The returns of this strategy come from 'speculative profits and bearing investment risks' (Radcliffe, 1997, p. 36; Reilly and Brown, 2006, p. 607). Thus, since authors like Yamin and Ali (2014) found that investors of ASE prefer to invest in low M/BV ratio, this means that ASE's investors sometimes prefer to out-perform the market in order to gain profit or maybe to avoid risks those are brought about by investing in the overvalued securities. Both of the above strategies depend on two main approaches. These approaches are explained below:

a. Timing Approach

Under this approach, portfolios' investors must include assets which can provide the best mix of risk and returns. Al-Dahrawi (2012) states that the portfolio's investors in the ASE cannot diversify their investment portfolio as they want or according their investment needs. The reason behind that is that the ASE only focused on trading bonds and common stocks. Therefore, the ASE investors can not include in their portfolios assets like pre-

[51]Is a wide portfolio includes a sample of 100 listed companies. The selection of this sample is relied on major criteria such as market capitalisation, number of traded days and turnover ratio (Atmeh and Dobbs, 2006; Balfeteh, Al-Mola and Zreqat, 2012).
[52] Invest in mispriced securities.

ferred stocks, commodities or precious metals. In this regard, the authors recommends the stock market to include financial derivatives as they help investors in creating more diversified investment portfolios, as compared with the current portfolios which are built just through including conventional instruments like common stocks and bonds. According to the passive strategy, investors make investment decisions based on the assumption that the estimated revenues of assets must be fair when they compared with the risk of each asset in the portfolio. On the other hand, active investors prefer to enter and exit the market when they realise that prices of the traded securities are over or under their intrinsic values (Radcliffe, 1997, p. 38). Thus, since authors like Yamin and Ali (2014) argue that investors of ASE prefer to invest in securities with low M/BV ratio, the researchers concluded that ASE's investors prefer to enter that market when they realise that the targeted securities are trading under their intrinsic values.

b. Selection Approach

According to this philosophy, investors of both strategies 'passive and active' select the securities those fit their needs and objectives. For example, passive investors prefer to diversify their portfolios as much as they can. However, in the ASE investors can diversify their portfolios only through investing in common stocks or bonds (Al-Dahrawi, 2012). In addition, they can also diversify their portfolios through investing in the stock exchange weighted index. On the other hand, active investors attempt to achieve investment objectives via buying or selling mispriced securities (Radcliffe, 1997, p. 38). Likewise, Yamin and Ali (2014) state that ASE's investors prefer to invest in mispriced stocks. According

to Balfeteh, Al-Mola and Zreqat (2012) there are two main approaches to evaluate securities and make investment decisions. These two methods are summarized as follows:

First: The Fundamental Analysis Approach

According to Frodievaux (2014) the principles of this approach date back to 1934, as they were set up by Graham and Dodd in their book, *Security Analyses*. The proponents of this approach 'fundamentalists' focus on analysing the company's financial statements, managements, competitors in the same industry. In addition, they evaluate the major economy forces that influence the company or the industry which it operates in (Faerber, 2008, p. 135; Radcliffe, 1997, p. 336). McClure (2010) defines it as a technique used to ascertain a security intrinsic value, through analysing the company's business or future prospects. However, using the term in its broader sense refers to the factors that influence the company's industry or the whole economy that operates in. According to fundamentalists, assets can be allocated through relying on two philosophical strategies. These strategies are discussed below (Radcliffe, 1997, p. 523):

1. **Top-Down Strategy**

This philosophy aims to determine a company stock's value through starting with assessing the aggregate economy which it operates in. Thereafter, it moves to evaluate the company's industry, and eventually the targeted company individually (Radcliffe, 1997, p. 523).

Chapter Two: The Economy of Jordan

Since economic conditions are able to affect all industries and firms within economies, this strategy believes that investment decisions cannot be made without using all available data and information of monetary and fiscal policies. More specifically, fiscal initiatives include increasing or decreasing levels of tax can influence the spending power of companies and individuals (Reilly and Brown, 2006, p. 361). Likewise, if governments adopt tight monetary policies, this would negatively harm the growth rate of money supply. Consequently, it will reduce the supply of funds which are needed for expansion's purposes (Reilly and Brown, 2006, p. 361 and 362; Canadian security course, 2013). Once this analysis has been done, fundamental analysts tend to evaluate the company's industry to find the best firm that meets their needs and preferences. Finally, they employ ratios such as liquidity, profitability, activity and debt ratios to examine the financial position of the targeted company (Faerber, 2008, p. 136; Froidevaux, 2014). According to Abdullah (2011) institutional investors in the ASE investors normally start with doing intensive reading about the levels of interest rates and the activity of the real estate sector. If they realise that the rates are high and the real estate sector is active and doing well, then they will be interested to enter the market. Thereafter, they tend to analyse the targeted company through using financial techniques like Liquidity ratios, Profitability ratios and Market Strength Ratios like P/E ratio and dividends yield ratio. After that they compare their analysis with the industrial standards. However, some investors who aim to invest on the long-term, they prefer to use models like Altman as well as Kida in order to anticipate the financial position of the company in the future.

2. Bottom-Up Strategy

This philosophy aims to predict a company stock's value by starting with evaluating the underlying company individually. By using this philosophy, investors attempt to form opinions regarding the prospects of the company's industry. Ultimately, these analyses are aggregated to give a general opinion about the stock exchange or economy as a whole (Radcliffe, 1997, p. 523). According to this strategy, fundamentalists concentrate on forecasting a company's stock value and compare it with the current market price. Hence, if the current price is less than the forecasted value, the company's stock will be seen as a lucrative investment opportunity and vice versa (Froidevaux, 2004). According to Hadad (2012) this approach is normally used by expertise investors through computing the fair value of stock's prices. However, some investors prefer to compare these values with the values of competitors companies which are working in the same industry.

Second: The Technical Analysis Approach

This approach is concerned with studying the statistics which are generated by the market activity. More specifically, technicians attempt to estimate the movements of stock prices by studying the historical directions, trading volumes or the market behaviour. However, since the proponents of this approach posit that history repeats itself, they heavily focus on analysing charts rather than earning prospects (Radcliffe, 1997, p. 332). By contrast, the fundamentalists concentrate on discovering the causes of price changes, instead of testing historical trends or the impacts of supply and demand 'price and volume'.

According to Radcliffe (1997, p. 332-333) technical analysts attempt to identify the trends of future prices by using techniques such as **Dow Theory technique**[53]. It is defined as a classical technician tool[54] used to explain the market's historical movements. **Support[55] and Resistance's Levels[56]** and it refer to the level which can be reached by prices (McClure, 2010). **Head and Shoulders:** this pattern assumes that the left shoulder is relying on high volume and price risings. Thus, when prices boom they will stimulate investors to sell in order to make profit. Thereby, the supply of securities will compel prices to move down, and ultimately the left shoulder will be formed. After that the decline in prices will increase the demand on securities. The prices will go up again and investors will increase the supply of securities to gain profits. Eventually the right shoulder will be formed (Radcliffe, 1997, p. 333). According to Abdullah (2011) investors of the ASE normally prefer to enter in the market when the volumes are high.

The chart technique this tool is used to portray the historical evolution of stock prices. Thus, based on past prices, the technical analyst tries to predict price trends in the future. According to Abbad, Fardousi and Abbad (2014); Abdullah (2011) there are four major

[53] This notion postulates that there are 3 types for price's movements. Firstly, the primary changes and it consists of trends usually lie between one to four years. Secondly, the intermediate moves or technical corrections, that it tries to monitor the process of speculation. Lastly, the minor price's changes and it occurs randomly around the primary and the secondary fluctuations. However, any type of these movements might occur at any point of time (Radcliffe, 1997, p. 523).

[54] This technique was firstly developed by Charles H. Dow. Thereafter, it was developed by William Hamilton who argued that it is possible to depend on this theory to forecast the market's movements.

[55]Relates to the levels of prices at "which prices are unlikely to fall through". However, if they drop, the fall might be on high volumes and bad news about the company (McClure, 2010).

[56] Refer to price levels which are unlikely to be exceeded, but if they do, the increase will be on high volumes and good news about the company. However, since these levels have a good power to anticipate when trends will be reversed, they seem to be essential for the process of decision making (McClure, 2010).

types of price charts to be used by ASE investors. These types includes the line chart[57] and it consists of a line represents a stock's closing prices. Bar chart[58] and it provides information about the high, low, open (if available) and closing prices (Achelis, 2014). Candlestick chart is one of the most common techniques which are used to provide a clear picture of price movements (Ciana, 2011, p. 6; Larsen, 2010). Finally, point and figure and they represent the crucial changes in prices, regardless of their timing (Reilly and Brown, 2006. P. 592). These charts are used by ASE investors according to their needs and skill levels. Therefore, it is not clear when the ASE chartist enter or exit the market (Abdullah, 2011). In this regard Abbad, Fardousi and Abbad (2014) states that "*it is normal to find many chartists of different opinion on the same chart, responding to it in different ways*". The **Momentum Indicators** are used to measure the rate of change in stock prices, over a given period of time (Reilly and Brown, 2006. P. 592). Some of the most common momentum indicators are as follows:

1. The volume indicator refers to the total number of shares or contracts which are traded during a specified period of time[59] (Abbad, Fardousi and Abbad, 2014).
2. The Moving Average refers to the security's average price during numerous period of time[60]. Chartists often calculate the moving average index to identify its general trend. For instance, if more than 80% of listed stocks are traded above their moving average, the market will be considered to be over bought. On the other hand, if less than 20% of stocks

[57]The chart shows the overall direction of trend and is preferred by market participant.
[58] This type is considered as the most popular type of security charts.
[59]Usually one day
[60] 'The 200-day moving average of prices has been fairly popular' (Reilly and Brown, 2006)

are traded above the moving average, the market will be over sold (Reilly and Brown, 2006, p. 592).

According to (Abbad, Fardousi and Abbad, 2014) at the beginning of April, when the prices became under the lower band, the Jordanian market shows sell signals. Thereby, this situation revealed that ASE's traders would be able to create new short positions in order to feel relax with the decrease in prices. However, in the middle of May till the end of October, the prices of the ASE's general index started to arrange "*between the moving average and the lower band which indicates a market weakness*". However, by the end of October the prices started to cross the moving average from the bottom[61].Thereby, "*this crossing serves as a warning signal to close the short positions*". In 2002, the decrease in the index prices reflected buying signals, however, when the prices moved up and exceeded the average in November/2002, the market conveyed for traders signs to close their short positions (Abbad, Fardousi and Abbad, 2014). Furthermore, the authors recommend investors to use this technique in the ASE as it has the power to "*generate significant returns*".

3. The Relative Strength Index and it is considered as one of the most common momentum indicators in technical analysis. The index ratio is calculated by dividing the stock price or an industry index by the value of market indices like S and P 500. Thus, if the calculated ratio is above 70, the security will be overbought. By contrast, if the index ratio less than 30, the security will be oversold (Reilly and Brown, 2006, p. 596; Abbad, Fardousi and Abbad, 2014). Though this technique is one of the most used technical indicators it doesn't has a good power to help ASE investors in generating good returns. In other

[61] The sell fixed length moving was 0.0447, while the buying average was 0.1454.

words, this technique maybe is not active in some developing markets like the ASE (Abdullah, 2011).

2.7 Chapter Summary

This chapter is constructed to discuss the economy of Jordan including the monetary policy and the development of the banking system. The chapter also sheds light on the history of the JOD and the development of the Amman Stock Exchange. Thereafter, the chapter moved on to describe the structure of the Jordanian financial market and the investment strategies including the preferences of Jordanian investors. The chapter also slights the light on the most used investment approaches in the Amman Stock Exchange. Consequently, the previous discussion revealed that Jordanian investors prefer to use both the fundamental and the technical analysis approaches. Investment techniques like the moving average are considered as one of the most suitable techniques those are used in the Jordanian stock market. On the other hand, the use of charts by ASE investors is not clear, since it doesn't give a clear indicator regarding when investors will enter or exit the market. The debate also revealed that ASE investors prefer to use the fundamental approach through employing equations like fair price equations, liquidity ratios, profitability and market strengths ratios, as well as Kida and Altman models. However, since the current research aims to assess the impact of the fluctuations in the TDIR, M/BV ratio, P/E ratio and the inflation in the decisions of Jordanian investors, as measured by the liquidity of the Jordanian commercial banks and the ASE, the coming chapter are constructed to reveal the gap in literature as well as explaining the reasons behind considering investors of Jordan as a

sample for this research. Thus, after introducing the economy of Jordan as well as investors' background, the next chapter is constructed to focus on reviewing the available literature that is concerned with the potential determinants of banks and stock markets' performance. The chapter also will explain the influential variables on the investment decisions and saving behaviours.

Furthermore, since the current research aims to understand the impacts of the 2007/8 financial crisis in investors' behaviour as captured by the liquidity of banks and the stock market, the next chapter discussed the impacts of the 2007/8 financial crisis in the MENA's region economies in general, while in the economy of Jordan particularly. Moreover, since the review of the coming chapter shows that there is no study assessed the impact of the fluctuations in the TDIR, M/BV ratio, P/E ratio and inflation in the decisions of Jordanian investors, including the impacts of the 2007/8 financial crisis, the current research is considered as the first Jordanian study, which is focused on evaluating the impact of these market fundamentals in the liquidity of banks and the ASE before, during and after the 2007/8 financial crisis. Moreover, after explaining the economy of Jordan as well as the development of the banking and financial system, it is necessary to prove that there is no previous study explained the impact of the TDIR, M/BV ratio, P/E ratio and the inflation in the decisions of Jordanian investors, over the period Q1/2000-Q4/2014.

Chapter Three: The Review of Literature

Chapter Three: The Review of Literature

3.1 Introduction

Due to the importance of market fundamentals to the process of decision making, the review of the previous studies are concerned with explaining the impact of a set of fundamental variables in the process of decision making. For instance, literature including Al-Amarneh, Al-Kilani and Kaddumi (2011) reported that Jordanian investors prefer to invest in companies with low M/BV ratio. A study by Tarashev, Tsatsaronis and Karampatos (2003) argued that the price of any financial asset reflects investors' attitudes towards the possible future inflows. Shaban and Al-Zubi (2014) argued that financial variables like the M/BV ratio and the P/E ratio are significantly influencing the decisions of Jordanian investors. Al-Ali and Kassem (2013) found a positive correlation between the liquidity of Syrian banks along with the levels of interest rates. By contrast, Vodova (2011a) showed a non-significant correlation between banks' liquidity along with interest rates, inflation rates. However, since the available statistics revealed that fundamentals variables like the TDIR, M/BV, P/E and the inflation are fluctuated considerably; the current research is mainly aimed at investigating the impact of the fluctuations in the TDIR, M/BV, P/E and the inflation in the decisions of Jordanian investors. Therefore, according to this research, the term 'market fundamentals' is only related to the weighted average time deposit interest rates, the inflation and the average ratios of the ASE's M/BV and the P/E. However, since the economy of Jordan such as developing economies in the region, was adversely impacted by the 2007/8 financial crisis, the current study also aims at explaining the impacts of the 2007/8 financial crisis on the behaviour of Jordanian investors.

Moreover, to investigate the impact of market fundamentals on the decisions of Jordanian investors, this chapter is constructed to support the selection of variables as well as to build the study's hypotheses. Thus, to cover the theoretical and empirical foundation of this research, the study presented a critical appraisal for the most recent studies, which are concerned with the potential determinants of investors' decisions and saving behaviour. Anyway, since these decisions are mainly measured by using the liquidity of banks and the stock markets, this chapter focuses on discussing the influential variables on the performance of banks and financial markets. Additionally, since developing economies like Jordan are found to be less integrated with the developed economies, the chapter only focuses on explaining the impacts of the global financial crisis in the economies of MENA region countries in general, while on the economy of Jordan particularly. Although this chapter discussed same related issues, however, it is found that some previous studies are differed in their perspectives and results as well.

3.2 Appraisal of Stock Markets

The review of literature has shown that there are a considerable number of studies concerned with the potential determinants of the stock market's performance. Thus, to achieve the aim of this research, these studies are discussed as shown below:

3.2.1 Stock Market's Liquidity

This research aims at assessing the impact of the fluctuations in market fundamentals like the time deposit interest rates, market-to-book value ratio, price to earnings ratio and the

inflation in the liquidity of the Jordanian commercial banks and the Amman Stock Exchange. In order to support the selection of the stock market liquidity's measures, as well as provide a clear image regarding the potential determinants of the developing stock market's liquidity, this section was constructed. However, relying on data availability the current section discussed few studies, which are focusing on the impact of market fundamentals in the performance of the developed stock markets. Anyway, since the current research focuses on developing markets like the Amman Stock Exchange, the study was concentrated on discussing the developing stock markets more than the developed markets in order to make a clear image regarding the potential determinants for the performance of the developing stock markets. In both the developed and developing economies, the liquidity of stock markets is considered as one of the most important indicators, which motivate investors to invest in a specific financial market. For instance investing in liquid financial market like the USA or the UK sometimes makes it easier for investors to convert the invested securities into the cash easily and instantly. In this regard, Al-Hunaiti and Ali (2011) mentioned that the main reasons behind the lack of financial derivatives in the Amman Stock Exchange relates to absence of market makers, which in turn play a vital role in enhancing the market's liquidity. On the other hand, the researchers mentioned that a majority of the developed financial markets like the USA and the Europe markets are featured to be liquid markets and that's why a majority of Arab institutional investors prefer to invest in the developed markets.

Moreover, since the liquidity of the stock markets plays a vital role in the process of capital allocation, it seems to be imperative to explain for investors the main determinants of stock markets' liquidity. As a result, that will help investors to allocate their funds effi-

ciently, and eventually, that will be positively linked with economic growth and development. However, though some previous studies showed that macroeconomic variables as well as the recent financial crisis are significantly impacting the liquidity of the developed stock markets, maybe this impact differs for developing stock markets like the Amman Stock Exchange, due to the limited integration with global financial markets like the USA and the UK. However, may be this view is true due to sensitivity of the developed financial markets to the volatility in macroeconomic variables and the performance of the global economy. In this contest, Boubakari and Jin (2010) mentioned that the development of liquid financial markets like the UK, France and Netherlands stock markets is more sensitive to the volatility in economic growth as measured by the GDP growth rate and FDI. By contrast, illiquid markets such as Belgium and Portugal are insignificantly correlated with the GDP and the FDI.

Thus, in order to assess the impact of the fluctuations in market fundamentals like the TDIR, M/BV ratio, P/E ratio and the inflation in the liquidity of Amman Stock Exchange, this section focused on reviewing the previous related studies, which are concerned of identifying the impact of interest rates and some of the other variables in the liquidity of the developed and developing stock markets. Additionally, the current research focuses on explaining the impacts of the 2007/8 financial crisis in the behaviour of Jordanian investors, due to the fluctuations in the TDIR, M/BV ratio, P/E ratio and the inflation. For instance, studies including Mora (2010) mentioned that the latest financial crisis negatively influenced the levels of interest rates, and the performance of financial global financial markets like the USA markets, through affecting investors' behaviour. For example, during the crisis period investors preferred to liquidate their securities to employ them in less

risky investments, such as treasury bills and bank deposits. Thus, since there is a significant correlation between the interest rates on the Jordanian dinar and the US dollar, the behaviour of the Jordanian investors is assumed to be affected by this crisis. Maybe this view holds true for the Jordanian market, since it is experienced similar volatility due to the impacts of the 2007/8 financial crisis. This volatility was in part caused by the currency being pegged to the US dollar. Moreover, by achieving the aim of this research, the results are expected to help investors to realise the impact of market fundamentals like the TDIR, M/BV ratio, P/E ratio and inflation in the liquidity of developing stock markets like the Amman Stock Exchange.

A study by, Al-Jafari and Tiliti (2013) examined the relationship between trading volume and the stocks' returns of the Jordanian listed banks, over the period Jul/2006-Dec/2011. Through using empirical techniques like the bivariate regression test, the variance decomposition test, the Johansen's Co-integration and the Pair-wise Granger-Causality tests, the study finds a non-significant correlation between stock market's returns and trading volume. On the other hand, the study finds a significant relationship between the fluctuations in stock returns and trading volume. Though the Amman Stock Exchange plays a vital role in financing the economy of Jordan, the study does not identify the potential determinants of ASE's liquidity. Therefore, the current study aims at filling this gap in literature, through finding the impact of market fundamentals in the decisions of Jordanian investors. These decisions are mainly captured by the liquidity of banks and the stock market. In this research, the liquidity of banks is measured by variables like LATA, LATD, TLTD and TDTA. The stock market's liquidity is typically measured by utilising factors like TOR, VT, TV and NOT. Through accomplishing the study's aim and objectives, the current re-

search will help investors to make rational investment decisions, as well as extending the available literature that is focusing on investors' decisions and saving behaviours.

Consistently, Kamath and Wang (2006) investigate the relationship between the stock returns and the trading volume, over the period Jan/2003-Oct/2005. For this purpose, the study relies on the daily rates of index returns for six Asian developing markets. Consequently, the study shows a positive relationship between stock returns, and the trading volume of the stock market's indices. However, the study does not provide evidence to support the impact of market fundamentals like the TDIR, M/BV, P/E ratio and the CPI in the stock market's liquidity. Through explaining the impact of market fundamentals in the market's liquidity, the current study will help investors of Jordan to distribute their funds efficiently in the stock market of Jordan. As a result that will positively impact the economy of Jordan. Additionally, the study will also contribute in enhancing the available literature that is focused on identifying the main determinants of banks and stock market's liquidity.

Ali (2016) aims to examine whether M/BV ratio causes granger to the liquidity of Amman Stock Exchange, over the period 2000-2014. Results from Johansen co-integration and vector autoregressive tests, revealed that there is no long or short-run causality running from the volatility in the M/BV ratio to the market liquidity as measured by the value traded and turnover ratio. In addition, the study confirmed that there are no causalities running from the market's liquidity to the M/BV ratio. The study concludes that financial factors like M/BV ratio do not impact the behaviour of Jordanian investors. However, the researcher just takes two factors to capture the liquidity of the ASE. In addition, the study

does not shed light on evaluating the impact of M/BV ratio in investors' decisions as measured by both the liquidity of banks and stock markets. In addition, the study shows a gap regarding the impacts of the 2007/8 financial crisis in investors' behaviours. Thus, to fill this gap in literature the current research focuses on finding the impacts of market fundamental and the financial crisis in the decisions of Jordanian investors, as captured by the liquidity of banks and the stock market. In this research, the liquidity of banks is captured by LATA, LATD, TLTD and TDTA. The stock market liquidity is typically measured by utilising factors like TOR, VT, TV and NOT. Moreover, through achieving this purpose, the current research will provide investors with important information regarding the role of market fundamentals in shaping their investment's decisions. The study will also explain the impact of the financial crisis on investors' decisions and saving behaviour. Consequently, that will help investors to make rational investment decisions during both the stable and the unstable financial periods.

A study by Khan and Rizwan (2008) examined the causal relationship between stock's returns and trading volume in the Karachi stock exchange, over the period Jan/2001-May/ 2007. The results of Granger causality test show a bio-directional positive relationship between trading volume, and stock returns. However, the study does not explain the behaviour of stock market's investors as measured by the trading volume or the other trading activity measures, which can be used to capture the market's liquidity. Therefore, through explaining the impact of market fundamentals on the stock market's liquidity as captured by TOR, VT, TV and NOT, the current research expects to help investors of Jordan to distribute their funds efficiently, in the stock market of Jordan. As a result that will positively affect economic growth of Jordan. Additionally, the study will contribute in enhancing the

available literature that is focused on explaining the main determinants of stock market's liquidity.

In an attempt to identify the relationship between stock's returns and trading volume, (Mahajan and Singh, 2009) analysed a time series data relates to the Sensitive Index (SENSEX), over the period Oct/1996-Mar/2006. Empirically, the results of Vector Auto-regression test, ARCH, GARCH and Granger Causality's models showed a positive relationship between trading volume and stocks' returns.

Bogdan, Bareša and Ivanovic (2012), aim to identify the influencing factors in the decisions of stock markets' investors, as measured by the market's liquidity over the period 1/Jan/2010-1/Jan/2011. The results of multiple regression analysis report that, variables such as market capitalisation, number of issued stocks, stocks' volume, number of transactions, and turnover ratio are positively associated with the liquidity of Zagreb stock exchange as measured by Amihud and Amivest's ratios.

Kim (2013) measures the relationship between stock market's liquidity and the future growth of the Korean economy, over the period Feb/ 1995-Dec/ 2011. Empirically, the study finds a positive relationship between the stock market's liquidity as measured by Amihud's ratio, along with the real GDP growth rate. However, Arabsalehi, Beedel and Moradi (2014) investigate the effect of stock market's liquidity as proxies by Amihud's ratio on the performance of Iranian listed companies, over the period 2003-2012. Empirically, the results show a positive impact for the liquidity of Tehran stock exchange on the

performance of Iranian listed companies. Companies' performance was mainly measured by the EVA and Tobin's Q indicators.

Amador, et al. (2013) aims at exploring the impact of European central bank's monetary policy in the liquidity of stock markets. The liquidity indicator is captured by using trading activity measures like the trading volume, turnover ratio, the transaction costs and the price impact. Through applying panel data estimations and VAR models, the study shows a positive relationship between the monetary policy as proxies by base money growth and interest rate on the liquidity of German, French and Italian stock markets. Furthermore, the researchers conclude that the monetary policy of ECB is considered as an active tool to determine the liquidity of the European major markets. A study by Wong and Fung (2002) find that the liquidity of Hong Kong stock's market as measured by turnover ratio and the trading volume is significantly related to the interest rate, price volatility, and global liquidity. In addition, the study reveals a sharp decline in the market's liquidity, due to the impacts of the Asian and Russian financial crisis on the domestic interest rate and stock prices.

Abdul-Khaliq (2013) finds a significant relationship between the liquidity of Amman Stock Exchange as measured by the turnover ratio, along with the GDP growth rate. Lee and Wong (2009) investigate the impact of the Chinese recent financial reforms on the liquidity of Shanghai stock market. Through analysing a panel data covers the period Oct/2002-Dec/2007, the study shows a positive relationship between financial liberalisation and the liquidity of Shanghai stock market as measured by stock prices, trading volume, number of outstanding shares and bid-ask spread.

Chordia, Sarkar and Subrahmanyam (2001) aim to identify the determinants of the daily bid-ask spreads and trading volume in the New York stock exchange, over the period 1991-98 period. The results reveal a strong relationship between the lagged market returns, lagged spread, lagged volume, lagged interest rate along with the spread of bid-ask and trading volume. In addition, the study showed that during the periods of the Asian and Russian financial crises, money supply have positively affected the liquidity of stock market as measured by quoted spreads, effective spreads and trading volume. Nevertheless, during the stable financial periods, this relationship was insignificant. Furthermore, in the normal times the study shows a positive relationship between the stock mutual funds and the stock market's liquidity as measured by the changes in the prices of ask and bid. However, during the crises periods the relationship becomes insignificant.

3.2.2 The Determinants of Stock Markets' Performance

Zafar (2013) aims to identify the most factors, which are influencing the performance of stock's markets as measured by the market capitalisation/GDP. For this purpose, the researcher analyses a time series data spans from 1988 to 2008. Empirically, the study finds a positive relationship between the foreign direct investment and the value traded, along with the performance of Karachi stock market. Nevertheless, the real interest rate is found to be negatively associated with the market's performance. The results also show a non-significant relationship between the developments of the Pakistani banking sector, along with the market performance.

Khrawish, Siam, and Jaradat (2010) apply simple and multiple linear regression tests to identify the influential factors of the capitalisation rate of Amman Stock Exchange, over the period 1999-2008. Their results show a significant-positive relationship between the government prevailing interest rate and the market capitalisation. However, the variable of government development is found to be negatively impact the rate of market capitalisation. Furthermore, the study finds a negative relationship between government interest rate and the rate of government development. However, the study does not examine the impact of the recent financial crisis on investors' behaviours. Thus, by filling this gap in literature, the study will help Jordanian investors to make rational investment decisions during the stable and unstable financial periods. Additionally, that will expand the available literature that is focusing on the impact of financial crisis upon the liquidity of banks and stock markets.

Likewise, a study by (Ologunde, Elumilade, Saolu, 2006) shows a positive correlation between the stock market capitalisation and the prevailing interest rates. However, the study did not elaborate the impact of interest rates in the liquidity of banks and stock markets. Therefore, this study will fill this gap through determining the role of market fundamentals to shape investors' decisions as proxied by the liquidity of both the ASE and the Jordanian commercial banks in the context of the 2007/8 financial crisis. Consequently, results from this study estimates to construct a framework to guide investors of banks and stock markets in the process of funds allocation. As a result that will contribute in enhancing the liquidity of banks and stock markets, and subsequently that will lead to accelerate the rate of economic growth.

Thang (2009) investigates the impact of interest, and exchange rates on the performance of Malaysian stock market. For this purpose the study used empirical techniques like Vector Error Correction Model, Johansen Co-integration test, and the Granger Causality's test. Empirically, the results confirm that in the long and short run both rates are negatively influenced the stock market index. The study induces that when the interest rate is high; investors prefer to liquidate their securities to deposit them into the banks. On the other hand, the lower rates of interest encourage them diverting their financial resources into investment in stock markets instead. Though the study examines the impact of interest rates on investors' behaviour, the study does not identify the impact of the TDIR, M/BV, P/E and the inflation in the liquidity of banks and the stock market. Furthermore, the study shows a gap regarding the impacts of the 2007/8 financial crisis in investors' behaviour. Thus, to fill this gap in literature, the current study aims at assessing the impact of the fluctuations in market fundamentals in the liquidity of the Jordanian commercial banks and the ASE, including the impacts of the 2007/8 financial crisis. Consequently, results from this study estimate to construct a framework to guide investors of banks and stock markets in the process of funds allocation. As a result that will contribute in enhancing the liquidity of banks and stock markets. Consequently, that will accelerate economic growth and development.

Consistently, Richard, Adekunie, and Ojodu (2012) measure the impact of interest rate, inflation, and exchange rates on the growth of Nigerian capital markets. Results from ordinary least square test reveal that a 1% increase in interest rate decreases prices of the stock market index by 44%. However, the study finds a non-significant correlation between the inflation and exchange rates along with the stock market's growth. Al-Mukit

(2012) employs a monthly time series data covers the period 1997-2010, in order to measure the impact of interest and exchange rates on the performance of the Dhaka stock market. After applying the Co-integrating and Error correction model, variance decomposition, and the test of Granger causality, the study shows a positive relationship between the exchange rate and the stock market index. By contrast, the stock index is negatively related to the weighted average of saving deposits interest rates.

Aurangzeb (2012) examines the impact of interest, exchange and inflation rates on the performance of three South Asian stock markets. Empirically, the results reveal that the performance of these markets is positively related to the changes in exchange rate and foreign direct investment. However, the inflation and interest rates are found to be negatively associated with the markets' performance. Precisely, a 1% increase in interest rate resulted in decreasing the market performance by 73%. In other words, the results indicate that the decrease in deposit interest rates encourages investors to withdraw their money to invest them in stock markets, or real estates. On the other hand, the increase in these rates motivates investors to keep their financial resources in banks in the hope of getting higher returns, and avoiding risks. However, though the researcher recommends investors to invest in deposits when the rates are high, or vice versa, the study does not explained the impact of time deposit interest rates and M/BV ratio on investors' behaviour as measured by both the liquidity of banks and the stock markets. Through filling this gap in literature, the study will identify the determinants of banks and stock markets' liquidity. This study will also explain the impacts of the 2007/8 financial crisis on investors' behaviour. Thereby, the study's results expect to help investors to allocate their funds efficiently and making rational investment decisions, during the stable and unstable financial periods.

Ali (2014) investigates the impact of interest rate on the performance of the Karachi stock market. After analysing a monthly data covers the period Q1/2004 to Q4/2013, the study discovered a negative relationship between interest rate and the stock market's performance. In addition, the study concluded that the higher interest rates decrease the market's efficiency. Based on these results, the researcher asks that since the higher rates allow investors to generate profits without bearing risks, why they should invest in stock markets and exposure their portfolios to the risk component. However, the study might develop this question without asking where investors shall invest their financial resources when the rates of interest go down. However, the current research aims at answering this question precisely through identifying the impact of the fluctuations in market fundamentals in investors' decisions. The study also will look at explaining the impacts of the latest global financial crisis in investors' behaviour.

3.2.3 The Determinants of Stock Markets' Development

Recently, numerous studies have been conducted to identify the potential determinants of the stock markets' development. For example, a study by Kemboi and Tarus (2012) was concerned with identifying the most influential factors of the development of the Nairobi stock market. For this purpose, the study analysed a quarterly data spans from 2000 to 2009. Consequently, the results prove that variables including the level of income, the development of banking sector as measured by M2/ GDP as well as stock market's liquidity as gauged by the turnover ratio and the value traded are significantly affecting the stock market's development. On the other hand, the results find a non-significant relationship

for macroeconomic stability as proxied by the real interest and inflation rates, along with the market capitalisation/GDP.

Sukruoglu and Nalin (2014) analyse a time series data covers the 1995-2011 period, to identify the determinants of stock market's development of 19 European stock markets. As a result, the researchers prove that stock market capitalisation/ GDP is positively impacted by the turnover ratio, traded value/ GDP, saving rate and GDP per capita. Anyway, the inflation rate, and the monetisation are negatively affecting the market's development. The researchers here just employ the ratio of turnover to measure the liquidity of stock markets. However, the current study not only employs extra factors to capture the stock market's liquidity, but also it is focused on identifying the determinants of stock market's liquidity as a proxy for investors' decisions. In addition, this research will explain investors' behaviours towards the impacts of the 2007/8 financial crisis.

In an attempt to ascertain the determinants of stock markets' development, Cherif and Gazdar (2010) analysed a panel data set covers the period 1990-2007. As a result, they find significant relationships among interest rate, saving rate, stock market liquidity as measured by the turnover ratio and the value traded, along with the stock market's development in MENA region countries. Though the study period covers the 2007/8 financial crisis period, the researchers have not tested the impact of this crisis on stock markets' liquidity. In addition, identifying the determinants of stock markets' liquidity was not studied. Thus, after determining the influential variables of stock markets' liquidity, this study will provide a roadmap for stock market's investors' to help them in making rational investment decisions.

Kaehler, Weber and Din-Aref (2013) focus on determining the most influencing macroeconomic indicators on the development of the Iraqi stock exchange. Consequently, the study finds that the stock market index is mainly driven by factors like interest rates, exchange rates, and the overall security situation as measured by the index of civilian deaths from violence causes. In addition, the results indicate that the inefficiency of the Iraqi stock market is caused by the weakness of the current electronic trading system.

3.2.4 The Determinants of Stock's Prices

To build a robust theoretical and empirical framework, this research presents a critical appraisal of the studies, which are concerning with the influential variables of stock prices. Earlier studies like (Uddin and Alam, 2007) focus on measuring the relationships between deposit interest rates and stock prices. In addition, the study concerns with explaining the relationship between the fluctuations in the stock prices and interest rate in the Dhaka Stock Exchange (DSE). Thus, through analysing a monthly data set covers the period May/92-June/04, the outcomes confirmed a negative association between stock prices and deposit interest rates. The study also reveals a negative relationship between the movements in interest rates and stock prices. In a similar vein, another study by the same researchers (2009) reveals a negative relationship between the volatility in interest rates and stock prices.

A study by Talla (2013) investigates the impacts of the volatility in macroeconomic indicators in the stock prices of Stockholm stock exchange. To analyse a monthly data covers

the period 1993-2012, the researcher uses empirical techniques like the ADF's test, Multivariate Regression Model and Granger causality test. Empirically, the study indicates that variables including currency depreciation, inflation and interest rates are negatively affecting stock prices. On the other hand, the indicator of money supply is found to be positively correlated with stock prices. Continuously, Hsing (2011) aims to determine the relationship between index prices of South African stock exchange and macroeconomic indicators. After analysing a sample of data covers the Jun/1980-Sep/2010 period, the study shows a negative relationship between the stock market index and the government deficit/ GDP, domestic real interest rate, the nominal effective exchange rate, the domestic inflation rate and the bonds' yield of the U.S government. On the other hand, the study finds that the stock index is positively related to the GDP, money supply/ GDP and the stock index of the U.S stock market.

A study by Kurihara (2006) aims at examining the relationship between a set of macroeconomics' indicators along with the stock prices in Japan. Through analysing a data set covers the period 2001/05; the OLS's results find a non-significant correlation between interest rates and the Nikkei stock index. Nevertheless, there is a significant relationship between the exchange rate and the stock prices of the U.S index as measured by DJI. However, though the liquidity of the stock exchanges is considered as one of the most important sources to finance economic growth and development, the researcher was not identified the impact of interest rates on the stock market's liquidity. Through filling this gap, the current research aims to assist the managements of stock markets to strengthen their financial plans to manage liquidity efficiently. The study will also contribute in ex-

panding the available literature that is focused on investors' decisions and saving behaviour.

Al-Shubiri (2010) focuses on identifying the potential determinants of stock prices of Jordanian commercial banks. After processing a sample of data covers the period 2005/8, the outcomes revealed a negative relationship among lending interest rate, inflation rate and stock prices. However, though authors like (Choudhry, et al., 2010, p. 11; El-Seoud, 2014) appraised the role of the deposit interest rates to the process of decision making, the available literature showed a gap regarding the impact of the weighted average time deposit interest in the decisions of Jordanian investors as measured by the liquidity of banks and the ASE. Thus, in an attempt to cover this missing point in literature, the current research is mainly designed to assess the impact of the fluctuations in the TDIR, M/BV ratio, P/E ratio and inflation in the decisions of Jordanian investors as measured by the liquidity of banks and the ASE. Expectedly, results from this study will play a significant role through enriching the investment culture of Jordanian investors. In addition, the study will help investors to make plausible investment decisions. Consequently, that will positively affect the performance of the Jordanian financial institutions, and eventually economic growth and development.

By using a data set covers the period Oct/2002-12, Chirchir (2014) attempts to identify the relationship between the movements in the weighted average lending interest rates and stock prices of Nairobi stock exchange. The findings of the MWALD's test showed a non-significant correlation between the interest rate and the NSE 20-stock index. In a similar

vein, Arango, Gonzalez and Posada (2002) show a non-linear and inverse relationship between the share's prices of Bogota stock market and the interbank loan interest rate.

Rafiques, Naseem and Sultana (2013) examine the impact of macroeconomic indicators like the gross domestic savings, discount rate, GDP per capita and consumer price index in the stock index of Karachi stock exchange. For this purpose, the study employs empirical techniques like the OLS. Consequently, the study shows a positive correlation between the GDP and gross domestic savings along with the KSE 100-stock index. However, variables like the consumer price index and the discount rate are found to be negatively associating with the stock index.

3.2.5 The Determinants of Stock Returns

Studies like Moya, Lapena and Sotos (2013) focus on examining the relationship between interest rates, and stock returns in the Spanish stock's market, over the period Q1/1993-Q4/2012. By depending on a wavelet-based framework, the results show a negative relationship between the movements in interest rate and stock returns. In addition, the study concludes that the Spanish companies are favoured by falls of interest rates. However, the study does not measure the effect of the fall in interest rate on the stock market's liquidity. To fill this in literature, I endeavour to investigate the impact of the volatility in the time deposit interest rates on stock markets' liquidity. Through utilising the market's liquidity as a proxy for investors' decisions, results from this research will propose a framework to help investors in making their investment decisions rationally. In addition, the study also tries to examine the impact of the 2007/8 financial crisis on investors' behaviour. Conse-

quently, that would help investors to mitigate the risks of the future financial crisis. Consistently, Eita (2014) aims to identify the causal relationship between interest rates and stock return. By using the method of Co-integrated Vector Auto-Regression, the study finds a negative relationship between interest rates and the stock index of the Namibian stock exchange.

Through applying empirical tests like the normality test, the unit root, the OLS, and the ARCH/GARCH models, El-Nader and Al-Raimony (2012) aim at exploring the common determinants of stock returns in the Amman Stock Exchange. The findings of the unit root test revealed that all the variables are stationary. There is a significant relationship between the weighted average interest rates on Loans and Advances, the exchange rate, the real GDP, consumer price index and the real money supply along with the stock's returns of Amman Stock Exchange. In addition, the study shows that stock returns was affected by events like the 9/11/2001, the Iraqi war in 2003, the financial crisis in 2008 and the political events in 2010. However, results from ARCH estimation test showed that variables like real money supply, inflation rate, real exchange rate, change in nominal interest rates, and the dummy variable of the 9/11/2001are negatively affecting stock's returns. On the other hand, the increase in the real GDP is positively associated with the stock's returns.

Studies including Khan, Khan and Rukh (2012) investigate the impact of interest rate, exchange rate and inflation rate on stock returns, over the period Jul/ 2001- Jun/ 2010. The results of the multiple regression tests showed a non-significant correlation between interest rates as well as inflation rates, along with the Karachi-100 stock index. Nevertheless, the stock index returns are negatively relating to the exchange rate.

3.2.6 Market and Book Value Appraisal

Since this study is concerned with identifying the role of M/BV ratio in the process of decisions making, this research reviewed some studies, which are relating to the market and book values. For example, a study by Aydoğan and Gürsoy (2000) aims at identifying the potentiality of the average ratios of price to earnings, and M/BV to predict the stock returns. After analysing a panel data covers the period 1986-99, the study proves that ratios like the P/E and P/BV ratio are able to predict the future returns of developing stock markets, especially in the long-run. In addition, the findings revealed that the P/E ratio is positively correlating with the stock's revenues, while, there is a negative relation between the M/BV ratio and stock returns. However, results from Pearson test showed a weak correlation between the P/E and M/BV ratio, along with stock's returns in the developing stock markets, including the Amman Stock Exchange. The correlation results of the P/E and M/BV ratio with the stock returns in ASE are presented in table 3.1, appendix B, p. 452. However, the study has not showed the impact of the M/BV ratio in investors' decisions as proxied by the liquidity of banks and stock markets. Through filling this gap in literature, the study will propose an investment guide to help investors to make rational investment decisions.

A study by Al-Deehani (2005) aims at determining the most influential indicators of share prices in the Kuwaiti stock market. Subsequently, the study finds that ratios like E/P and M/BV as well as the cash flow per-share are significantly correlating with the stock prices of the Kuwaiti traded companies. On the other hand, the results indicated that the ratio of

retention is the least influential factor on the stock prices. However, the study did not provide a conclusive evidence to support the fundamental relationship of M/BV ratio along with the decisions of stock markets' investors. To fill this gap in literature, this research aimed at investigating the impact of the volatility in M/BV ratio in the liquidity of stock markets as a measure for investors' decisions. By achieving that this research will help investors to rationalise their decisions, as well as avoiding the challenges of financial crises.

By a different manner, Lewellen (1999) tries to examine the potentiality of book-to-market value ratio to predict the time variation of the portfolio's estimated revenues, as well as the ability of market beta to explain the variation in the future returns. Empirically, the study shows that the ratio of B/MV is a predictable indicator for stock returns, as well as it is strongly associated with the variation of the risk factor as gauged by the 3 factor formula of Fama and French. However, after controlling the changes in beta, the study indicates that the ratio of B/MV provides little information regarding the expected returns. However, the study does not evaluate the potentiality of M/BV ratio to affect investors' decisions. Thus, after investigating the effect of the M/BV ratio on the liquidity of stock markets, this research will help the management of stock markets to predict the volumes of securities, which are going to be liquidated or purchased in a specific period of time.

During the period Q1/1971 to Q4/88, Chan, Hamao and Lakonishok (1991) investigated the impact of firm's size, earnings' yield, cash flow's yields and the ratio of B/MV on the stock returns of the manufacturing and non-manufacturing companies in Japan. The results showed a significant relationship between the expected returns and all the explanato-

ry variables. In addition, variables including the B/MV ratio and the yield of cash flow are significantly affecting the stock revenues. However, the study does not measure the impact of M/BV ratio in the financial markets' liquidity. By filling this gap in literature, the current research expects to propose a framework to help investors to make rational investment decisions.

Landskroner, Ruthenberg and Pearl (2006) shed the light on identifying the affecting factors on the M/BV ratio of Israeli Banks. By analysing a time series data covers the period 1994-2005, the results of Multivariate regression show a significant association between the M/BV ratio along with returns, market risk, reinvestment policy and economic conditions. On the other hand, variables like the ROE and the market risks are considered as the most influential variables of the M/BV ratio. However, the study does not assess the impact of the average ratio of M/BV in the stock market's liquidity. By filling this gap in literature, findings from this study will explain the role of M/BV ratio in making investment decisions. Subsequently, that would propose a framework to guide investors, to make rational investment's decisions. The results also will help investors to allocate their wealth efficiently, and subsequently that will enhance economic growth and development.

To evaluate the empirical and theoretical validity of M/BV ratio, Agrawal, Monem, and Arif (1996) employed a cross-sectional and longitudinal data over the period 1975-88. Through developing models on the basis of Gordon's constant dividend growth model, the results confirmed the possibility of using the M/BV ratio as a valid valuation model. In addition, the results showed that this ratio is significantly influenced by economic regime's shifts. Nevertheless, the inflation rate and the debt/ asset's ratio are found not to

influence the stock prices. A study by Malhotra and Tandon (2013) identifies the main determinants of stock's market values over the period 2007-2012. Empirically, the regression's results showed that variables such as a share's book value, EPS and the P/E ratio are positively associated with the share prices of the 95 listed companies. On the other hand, the findings revealed that the dividend yield factor is negatively affecting the stock prices in the Indian stock market. In addition, the study proves that the recent global financial crisis decreased the S.D of market prices, while it increased a firms' book value.

In a similar vein, Srinivasan (2012) determined the influencing factors on stock prices of six Indian major sectors. By analysing a data set covers the period 2006-11, the study shows a positive correlation between the book value per share along with the stock prices of power, information technology and pharmaceutical's sectors. On the other hand, the factor of stock dividend is negatively affecting the stock prices of power, infrastructure pharmaceutical and manufacturing sectors. However, the study reports that the E/P and price-earnings ratios are considered as the most influential factors of stock prices. Makrani and Abdi (2014) examine the impact of book value, cash flow and the net earnings on stock prices, over the period 2007-12. To achieve that the study relies on a sample encompasses 129 listed firms in the Tehran stock exchange. Subsequently, the results reported that the impact of book value is stronger than the effect of cash flow and earnings. However, the impact of these variables was not increased throughout the study's period.

During the period 1993-94 and 2008-09, Sharma (2011) examined the relationship between market prices with a selected group of financial factors. These factors include the E/P ratio, company' size in terms of net worth and sale's volumes, the dividend pay-out

ratio, profit per share, dividend yields, a share's book value and stock's price/ EPS. Empirically, the results revealed that variables like book value, E/P, P/E ratio, dividend pay-out ratio and dividend per share are positively influencing the market prices. The results also indicated that ratios like the dividend per share and E/P are considered as the most influential factors of the stock prices of Indian listed companies. Furthermore, since the higher rate of a share's book value is considered as a positive indicator for a company's stability, the study concludes that the variable of book value is significantly affecting investors' decisions. Based on these findings, the study recommends that it is essential for Indian investors to compare a firm's book value with the stock market value before investing in the stock's market.

Al-Mumani (2014) explores the relationship of banks' specific internal factors with the stock prices of the Jordanian listed conventional banks. The study finds that except the dividend/share and dividend pay-out ratios, variables such as share's book value, E/P, price earnings ratios and bank's size are significantly associated with the stock prices. Nevertheless, the regression's results showed that stock prices are negatively affected by bank's size. However, the study has not identified the influencing factors on banks liquidity as a proxy for investors' decisions. Through filling this gap in literature, the current research will help investors to make rational investment decisions and invest their financial resources efficiently in the financial institutions of Jordan.

Pontif and Schall (1998) evaluate the ability of B/MV of the DJI to anticipate the stock markets' returns and the excess returns of small firms, over the period 1926-94. Empirically, the results revealed that the average ratio of Dow Jones industrial B/MV is consid-

ered as an active technique to forecast both the small firms' returns and the stock market. Additionally, the study showed a positive correlation between B/MV ratio and the future returns as measured by the CRSP value-weighted index (VWRET) and the CRSP equally weighted index (EWRET). Furthermore, the study found a positive correlation between the B/MV ratio and the returns of small firms.

Ross (2006) mentioned that investors and fund managers invest in the financial markets through adopting various investment strategies. Though some investors find it difficult to choose the most appropriate strategy, however, these strategies can achieve satisfied results once they are employed by experienced parties. In this context Crispin Finn[62] argues that the key point for investors is adopting the investment approach, which they are feeling comfortable with. This comfortable stage cannot be reached without understanding the differences between two of the most common investment styles "Value[63] and Growth[64]". The former style argues that investors prefer to invest in stock prices, which are cheap compared with their "intrinsic value". Thus, to know whether a company's share is trading under or over its real value, investors must depend on effective techniques like P/E ratio, or M/BV ratio. The lower M/BV compared to the real value, tells one investor that a firm's share is undervalued, and vice versa. On the other hand, the higher P/EPS ratio than the real value, tells investors that a company's share is overpriced and vice versa.

[62]Director of UK equities retail at Credit Suisse

[63] This strategy was firstly defined by Benjamin Graham in the middle of the twentieth century, as he motivated investors to concentrate on companies' balance sheets rather than the account of profits & losses.

[64] According to this style, through focusing on the profit and losses account, investors tend to invest in companies with fast-growing earnings.

Similarly, Ganesh (2012) mentioned that rational investors prefer to select the stocks, which have lower P/E compared with their intrinsic value. In addition, he reports that a majority of blue-chip companies prefer to rely on the lower P/E ratios when they invest in the domestic stock markets.

3.3 Evaluation of Banks

The review of literature has shown multiple studies concerned with the main determinants of banks' performance and liquidity. Thus, to build a well theoretical and empirical foundation, some earlier related studies are discussed below:

3.3.1 The Determinants of Banks' Performance

Peng, et al. (2003) investigates the impact of the diffusion between the interest rates on the US and the Hong Kong Dollars on the performance of the Hong Kong banking system. For this purpose, the performance of banks was gauged by the net interest margin (NIM), noninterest revenues/total assets, general and administrative expenses/ total assets and net charges for provision/total assets. Empirically, the findings suggested that the spread of interest is conversely associated with banks' performance as measured by the net interest margin and charges for provisions. However, since deposit interest rate is more responsive than the lending rate to the changes in risk premium, the study showed a negative correlation between the risk premiums along with the NIM.

Irungu (2013) employs a linear regression analysis to measure the impact of interest rates spread, the ratio of saving deposits, liquid assets/total assets, operating efficiency, bank's share market and GDP growth rate on the performance of Kenyan commercial banks. Consequently, the results showed a positive correlation between the independent variables along with the banks' performance as measured by return on assets. However, the study has not identified the direct relationship between the deposit interest rates and banks' liquidity. Thus, by filling this gap in literature the current study will provide investors with important information regarding the role of interest rates in the process of decision making. In addition, this research tries to understand the behaviour of Jordanian investors towards the impact of the latest global financial crisis.

Chinaecherem and Mgbataogu (2013) examine the effect of interest rates' regimes on the function of financial intermediation in the commercial banks of Nigeria. Through applying the co-integration and the error correction models, the results showed a non-significant association between the lending interest rates and the banks' lending behaviour and the credit's demand. On the other hand, the study shows a positive association between the deposit interest rates and lending behaviour of Nigerian banks. A study by Olokoyo (2011) tends to identify the potential determinants of lending behaviour for Nigerian commercial banks, over the period 1980-2005. As a result, the study shows a long-run relationship between loans and advances 'LOA' along with deposits' volumes, GDP growth rate, and lending interest rates, investment portfolio, requirement reserve ratio, liquidity ratio and exchange rate. However, the volume of banks' deposits is considered as the most influential variable on banks' performance as measured by LOA. Anyway, the study does not identify the determinants of investors' decisions as gauged by the liquidity of banks.

The current research is going to fill this gap in literature, through identifying the impact of market fundamentals on banks' liquidity.

Okoye and Eze (2013) investigate the impact of banks' lending rate and the monetary policy rate on the performance of Nigerian deposit banks, during the period 2000-2010. Empirically, the results showed a positive correlation between the interest rates on loans and the monetary policy rate along with banks' performance as measured by banks earnings. Alternatively, Enyioko (2012) argues that there is no significant correlation between the interest rate's regime and the performance of Nigerian deposit banks as monitored by ROA, ROE and the ratio of assets utilisation. However, these studies have not examined the relationship between the deposit interest rates and banks' liquidity as a proxy for investors' behaviours. By filling this gap in the available framework, this research will help investors to use the interest rates as an effective tool to make rational investment decisions. However, in an attempt to identify the determinants of commercial domestic and foreign banks' performance in Uganda, Frederick (2014) showed that factors like the operating expense, capital adequacy, loan loss provision/total loan and asset quality are negatively influencing banks' performance as monitored by ROE and ROA. On the other hand, the study shows a positive relationship between the net interest margin as well as the inflation rate along with the return on assets.

3.3.2 The Determinants of Banks' Profitability

The issue of identifying the effect of interest rates and the inflation on banks' profitability was studied intensively. For instance, by measuring the impact of banks' characteristics

and macroeconomics' factors in banks, Deger and Adem (2011) discovered a positive relationship between the real interest rates and the profitability of Turkish banks as monitored by ROE and ROA. However, the study shows an inverse correlation between assets' size and credit's portfolio along with banks profitability over the period 2002-2010. The researchers here have not measured the impact of interest rates on banks' liquidity. This gap in literature will be filled via examining the fundamental relationship between time deposit interest rates, and banks' liquidity. Eventually, results from this research are expected to help investors to make rational investment decisions. The study also expects to assists banks' management and decision makers to build effective strategies to predict volumes of liquidity, which are estimated to be deposited or liquidated in a specific period of time.

Similarly, through analysing a panel data cover the period 2002-2010, Alper and Anbar (2011) analysed the impact of bank's characteristics and macroeconomic indicators on the profitability of Turkish commercial banks. Subsequently, the researchers explored a positive correlation between the rate of non-interest income and asset size along with banks' profitability, as measured by ROA and ROE. Nevertheless the size of credits and loans' portfolio is found to be negatively affecting banks' profitability. However, the study showed a positive correlation between the real interest rates and banks' profitability as gauged by the ROE ratio. Additionally, the results revealed a non-significant correlation between the inflation rate, real GDP, capital adequacy ratio, banks' liquidity as monitored by the ratio of liquid assets /total assets, deposits/total assets and the margin of net interest rate along with both the ROA and ROE. Although, the researchers used some variables, which are similar to this research, the researchers do not provide any evidence to support

the impact of market fundamentals like TDIR, M/BV ratio, P/E ratio and inflation on investors' decisions as proxied by banks' liquidity. In this research the liquidity's indicator was captured by LATA, LATD, TLTD and TDTA. However, through filling this gap in literature, results from this research expect to propose a framework to help investors in investing their funds efficiently. Furthermore, the current study will examine the impacts of the recent financial crisis on investors' behaviour. Thereby, the study expects to make a significant contribution to the available literature, through providing investors and decision makers with important information regarding the process of making rational investment decisions, during the stable and unstable financial periods.

Riaz (2013) examines the relationship of banks characteristics and a sample of macroeconomics' indicator like interest rate, GDP and inflation rate, along with the profitability of 32 Pakistani commercial banks. After analysing a sample of data covers the period 2006-10, the regression results showed positive relationships between banks characteristics, such as credit risk, total liabilities/total assets, operating efficiency, as well as the total deposit/ total assets along with banks' profitability as measured by ROE. In addition, the study showed a positive relationship between variables like credit risk, operating efficiency, GDP growth along with banks' profitability as measured by ROA. However, the interest rate and the inflation rate are found to be negatively associated with the ROA as a proxy for banks' profitability.

A study by John (2013) attempts to investigate the impact of bank specific indicators and the 2008-11 crisis on the profitability of Polish and Slovakian banks, over the1999-11 period. In both periods, before and after the crisis period, the findings of the OLS and the

fixed effect models find a positive relationship between the ratio of equity/total assets and the profitability of Polish banks. On the other hand, the study showed a positive association between customer deposit/total funding along with the profitability of Slovakian banks in the pre-crisis period. In addition, the results report that the liquidity ratio as proxied by liquid assets/ customer deposits and short term funding is positively influenced the profitability of polish banks in the crisis period. However, when it comes to macroeconomic indicators like the discount rate, inflation rate, real GDP and tax rate, the study revealed that banks' profitability as monitored by ROAE and ROAA is significantly influenced by macroeconomic factors.

A study by, Agama (2014) investigates the impact of macroeconomics and banks' specific indicators on the profitability of Ethiopian banks. Thus, by analysing a panel data extends from 2000 to2009, the study finds the variable of market share; operational efficiency, banks' asset composition, and country's economic growth are positively linked with banks' profitability. On the other hand, the real market interest rate and asset quality are negatively associated with the return/average assets (ROAA). The study also finds that the GDP growth rate and the real interest rate are positively correlated with banks' profitability. Persistently, through analysing a time series data covers the period 1999-2012, Samuel and Ihejirika (2014) measured the impact of interest rates in the profitability of Nigerian banks. The results of Multivariate regression test found an inverse relationship between saving deposit interest rates, real interest rates and the maximum lending rates along with banks' profitability as monitored by ROA and ROE. Furthermore, the results acknowledged that the saving interest rates, prime lending, minimum discount, treasury bills and maximum lending rates are insignificantly correlating with the net interest margin.

Through testing the impact of lending and deposit interest rates, inflation rate and the ratio of requirement reserve on banks' profitability, Bosede, Olusegun, and Olubukunola (2013) found significant relationships between the explanatory variables along with banks' profitability as gauged by deposit/ lending ratio. Anyway, there is no evidence to support the direct relationship between deposit interest rates along with banks' liquidity. Therefore, this research will make a significant contribution to the existed knowledge through measuring the impact of market fundamentals on banks' liquidity. Additionally, the study will provide a managerial contribution through assisting banks and money authorities to manage the liquidity of the financial system efficiently.

Naceur and Omran (2008) investigate the effect of macroeconomic indicators and bank's characteristics on banks' performance, over the period 1988-2005. Banks performance was mainly captured by profitability's indicators like the ROA, intermediation's cost (NIM) and operating performance (operating costs/ ROA+ deposits). Results from multivariate regression tests suggested that bank's margin and the profitability's indicator are positively related to banks' capitalisation and credit risk. The study shows a negative relationship between the sizes of banks along with the profitability's indicator. However, regarding the macroeconomics' indicators, the study showed that only the inflation rate is associated with the interest margin. Furthermore, the study suggested a positive correlation between the developments of financial markets as measured by the market capitalisation/GDP along with banks' profitability.

Khan, et al., (2011) aims at identifying the profitability's determinants in sixteen Pakistani banks, during the period 2000-10. The results of fixed and random models show a strong relationship between banks' specific characteristics along with banks' net profit. The study reports that variables including the net interest margin, non-interest income, deposit/asset ratio, loan/assets ratio, loan growth, non-performing loans, and ROA are considered as the main determinants of banks' profitability. However, after dividing banks into small and large banks, except the variable of non-performing loans, both categories showed similar results regarding the relationship between banks' specific indicators and banks' profitability.

3.3.3 Banks' Liquidity Appraisal

The review of literature has shown considerable studies concerned with the impact of interest rates and inflation on the liquidity of banks. For instance, a study by (Al-Ali and Kassem, 2013) examined the impact of the volatility in deposit interest rate in the performance of Syrian banking sector as measured by time and saving deposits. Through analysing quarterly data covers the period 2005-2010, the study finds a positive correlation between banks' liquidity and interest rates. However, the study has not explained the relationship between deposit interest rate and investors' decisions as captured by the liquidity of banks. The liquidity's indicator in this research is captured by LATA, LATD, TLTD and TDTA. Additionally, the current research will assess the impacts of the 2007/8 crisis in investors' behaviour as measured by the liquidity of banks and the ASE. Thus, by filling this gap, the study will help investors to enrich their investment culture, which in turn will help them to invest their funds efficiently. In addition, through evaluating the effi-

ciency of deposit interest rates to measure banks' liquidity, findings from this study will help financial authorities to enhance the process of funds' allocation.

Malik and Rafique (2013) examine the impact of banks' characteristics and macroeconomics' indicators in the liquidity of 26 Pakistani commercial banks. The results showed a positive relationship between the monetary policy rate and banks' size along with banks' liquidity, which is measured by liquid assets/total assets (L1) and net provision advances/assets (L2). Conversely, the inflation rate is found to be negatively relating with banks' liquidity. In addition, the study suggests that banks' liquidity as gauged by L1 is negatively influenced by the Asian crisis in 2008. Nevertheless, the L2 was positively impacted by this crisis. However, the study has not examined the impact of the 2007/8 financial crisis on banks' liquidity as a proxy for investors' decisions. To cover this gap in the available literature, the research sheds the light on measuring the impact of market fundamentals on investors' decisions as proxied by the liquidity of banks and the stock market.

In an attempt to identify the influential factors of liquidity creation in German banks, (Hackethal, et al., 2010) employed a sample of 457 saving banks, over the period 1997-2006. Consequently, the study finds a significant relationship between macroeconomics' factors like unemployment rate, interest rate, yield curve and saving quota with banks' liquidity as gauged by the gap of liquidity transformation, and the BB measures. In addition, the results showed a significant relationship between banks' liquidity and banks' characteristics. On the other hand, the study found that bank size and financial performance as monitored by earnings before interest and tax, are insignificantly correlated with banks' liquidity. In addition, the study shows negative relationships between liquidity's

creation and the monetary policy rate and the rate of unemployment as a proxy for loan demand and economic health.

Aikaeli (2006) focuses on determining the influencing variables on the liquidity's surplus of Tanzanian commercial banks. The liquidity surplus was captured by factors like short-term obligations, total liquid assets minus statutory required reserves and the outflows of expected deposits. Empirically, the results of autoregressive distributed lag model explored a negative correlation between the requirement reserve rates and banks' liquidity. Nevertheless, the volatility in lending interest rate, bank borrowing rate and cash preference of deposit holders are positively associated with banks' liquidity in the long term. Anyway, the researcher has not identified the direct relationship between TDIR, M/BV ratio, P/E ratio and inflation along with the liquidity of banks. Additionally, the study showed a gap regarding the impact of financial crisis on investors' decisions. Therefore, the gap in literature will be filled through explaining the impact of market fundamentals and the recent financial crisis, in the decisions of Jordanian investors over the period Q1/2000-Q4/2014. As a result, the current research will provide investors with important information regarding the role of market fundamentals in the process of decision making.

An earlier research by Vodova (2011a) focused on investigating the impact of banks' specific characteristics and macroeconomics variables in the liquidity of Slovakian banks. Banks' liquidity was gauged by factors like liquid assets/total assets, total loans/total assets, total loans/total deposits+ current liabilities and the ratio of liquid assets/ total deposits plus current liabilities. Consequently, the regression's results showed negative relationships between the liquid asset/total assets along with banks' profitability, capital adequacy

and banks' size. However, the measure of lending activity is found to be positively related to the GDP growth rate and banks' profitability as gauged by ROE. By contrast, the study shows a negative correlation between the unemployment rate and the lending activity. In addition, the results showed a non-significant correlation between banks' liquidity along with interest rates, inflation rates, net interest margin and the non-performing loans. Moreover, the study concludes that banks' liquidity has experienced a decline due to the impacts of the latest financial crisis. Though, the researcher examined the impact of interest rates on banks' liquidity, the current study will provide extra measures to capture the liquidity of banks. These measures include ratios like the LATA, LATD, TDTA and the TLTD. In addition, this study will provide evidence to support the impact of market fundamentals on banks liquidity as a major indicator for investors' decisions. Furthermore, the study will also explain investors' behaviour towards the effects of the 2007/8 financial crisis. Consequently, the current research will extend the available literature that is focused on investors' decisions and saving behaviour.

Persistently, over the period 2001-09, Vodova (2011b) tests the impact of macroeconomic indicators and banks' characteristics in the liquidity of Czech Republic banks. The results showed a positive impact for the lending interest rate, capital adequacy, interbank rate and non-performing loans upon banks' liquidity. The study captured the liquidity's indicator by variables like the ratio of liquid assets/ total assets, total loans/total assets, liquid assets/deposits plus short-term borrowing, and total loans/total deposits plus short-term financing. However, the study finds a negative association between banks' liquidity along with the business cycle, the financial crisis and the inflation rate. Further results showed a

non-significant correlation between banks' liquidity along with the interest margin, unemployment rate and the monetary policy rate.

Along similar lines, Vodova (2013) concentrates on identifying the influential factors of the liquidity of Hungarian commercial banks. Bank's liquidity was measured by liquid assets/total deposits + current liabilities, liquid asset/total asset, as well as liquid assets/total deposits. Consequently, the study finds a positive relationship between banks' liquidity along with the interest rate on loans, capital adequacy, and banks' profit proxies by ROE. However, the results stated that the liquidity of banks is negatively related to the interest rate of monetary policy, interest margin, bank size, and interbank rate. However, the study failed to define the relationship between GDP along with banks' liquidity. Anyway, though the above studies employed some related measures to capture the liquidity of banks; these studies have not measured the impact of the fluctuations in the weighted average TDIR and the average ratios of M/BV and P/E as well as the inflation in the liquidity of banks and financial markets as main proxies for investors' decisions. Furthermore, these studies showed a gap regarding the impact of the 2007/8 financial crisis on investors' behaviour as measured by the liquidity of banks and stock markets. The studies also have not provided a framework to help investors in the process of making rational investment decisions. Therefore, the current research aims at suggesting a framework to help investors in the process of making rational investment decisions. The study will also explain investors' behaviour towards the impacts of the 2007/8 financial crisis. Consequently, that will contribute in enhancing the available literature, which is focused on investment decisions and saving behaviour. Empirically, the current research will help investors to make rational investment decisions through relying on the role of market fundamentals.

Continuously, Subedi and Neupane (2013) examine the influential indicators of banks' liquidity, over the period Mar/2002-Dec/11. Based on a questionnaire and a quarterly data set for six Nepalese banks, the regression results revealed a negative relationship between the liquidity of banks along with the capital adequacy. In addition, the study finds that banks' liquidity is negatively related to the inflation rate, non-performing loans, GDP growth rate, short-term interest rate, and the liquidity premium that is paid by borrowers. However, the study suggests a positive association between banks' liquidity along with banks' size and loan growth. Furthermore, the results showed a positive correlation between banks' performance as proxied by ROA and the liquidity premium. The study did not explain the impact of time deposit interest rates and financial crisis on investors' behaviours as monitored by the liquidity of banks and stock markets.

A study by Malede (2014) focuses on identifying the main determinants of the lending behaviour of Ethiopian commercial banks, over the period 2005-2011. Through using panel data of eight commercial banks, the results suggest that, the lending behaviour of the Ethiopian banks is significantly related to banks' size, credit risk, gross domestic product and the liquidity ratio as measured by the total assets to total deposit ratio. However, the results found that the interest rate is insignificantly correlated with banks' lending behaviour.

Through evaluating the determinants of banks' liquidity, Fadare (2011) found that factors including the monetary policy rate, liquid assets/ current liabilities and lagged loans/total deposit are significantly affecting banks' liquidity as monitored by the total loans/total de-

posits ratio. The study also showed a negative relationship between banks' liquidity and factors like money demand, liquid assets/current liabilities and monetary policy rate. On the other hand, the findings asserted that variables like currency in circulation/banks' deposits and lagged loan/total deposits are positively linked with the liquidity of banks. Furthermore, the results revealed a significant effect for the latest financial crisis on the liquidity of Nigerian money deposit banks. During the period Jan/2002-Jan/13, Kanj and Khoury (2013) find that factors including the interest rates, bank assets and adverse political situations are significantly affecting the deposits of non-resident investors as denominated by both, the domestic and foreign currencies. In addition, the study indicated that the financial crisis was positively affected banks' deposits as measured by local currency.

Studies like Haron and Azmi (2006) shed light on fining the determinants of deposits' volumes, over the period 1990-2003. By applying a co-integration test, the study finds that the deposits of Malaysian commercial banks are significantly influencing by the deposits' interest rates, profit rates on Islamic deposits, base lending rate, GDP, money supply and the inflation rate 'CPI'. Though the study postulates an inverse correlation between the performance of Kuala Lumpur stock index and banks deposits, this relation is found to be positive. Additionally, the study concludes that investors of Malaysian commercial banks' behave in conformity with saving behaviour theories, which are assuming positive correlations between interest rates and banks' deposits.

Alternatively, Chen and Phuong (2014) proved that banks' liquidity buffer is significantly related to factors like securitization, deposit-lending synergy, banks' specific, business cycle, and the crisis period. However, factors like deposit-loan synergy are considered as

the most influential factor of banks' liquidity. The study showed a negative relationship between banks' liquidity and monetary policy rate. On the other hand, there is a positive correlation between banks' liquidity and banks' size. Furthermore, the results revealed that the recent financial crisis resulted in increasing the level of banks' liquidity buffer. However, the study has not studied the impact of the fluctuations in market fundamentals on investors' decisions. Thus, through filling this gap in literature, this research will help investors to use the TDIR, M/BV, P/E ratio and inflation as effective tools to assess the quality of their investment decisions.

3.4 Critical Examination of Banks and Financial Markets

This research is concerned with investigating the relationship of market fundamentals along with the liquidity of banks and the stock market. Thus, to build a well theoretical foundation, the chapter proceeds to discuss the fundamental relationship between the performance of banks and stock markets along with economic growth. For instance, a study by Wong and Zhou (2011) examined the relationship between the development of five developed stock's markets and economic growth. Thus, through employing a sample of the UK, USA, China, Japan and Hong Kong economy, the results revealed that the development of the UK, China, USA, Japan and Hong Kong stock markets is positively associated with economic growth.

Similarly, Boubakari and Jin (2010) examined the causality relationship between the developments of stock's markets as proxied by the turnover ratio, trading value, market capitalization, along with economic growth. As a result, the study showed that the develop-

ment of the UK, France and Netherlands stock markets is positively associated with economic growth as measured by GDP growth rate and FDI. However, when the study was conducted on countries with small and illiquid stock markets, such as Belgium, and Portugal, the relationship is found to be insignificant. Though the researchers used the turnover ratio and trading value to capture the stock markets' liquidity, they did not identify the determinants of stock markets' liquidity as a proxy for investors' decisions. To fill this gap in literature, the current study tries to define the impact of the fluctuations in market fundamentals in the liquidity of banks and stock markets. In this research, the liquidity of banks is captured by LATA, LATD, TLTD and TDTA. The stock market's liquidity is typically measured by utilising factors like TOR, VT, TV and NOT. The study also concerns of explaining the impacts of the recent financial crisis on investors' behaviour. Through achieving this purpose, the current research will provide investors with important information regarding the role of TDIR, M/BV ratio, P/E ratio and inflation in the process of decision making. Additionally, results from this research expect to help investors to make rational investment decisions during both the stable and unstable financial periods.

Over the period 1990-2010, (Kolapo and Adaramola, 2012) finds a long-run correlation between the Nigerian stock market's performance as measured by the capitalisation rate, value of transaction, total of new issued stocks, total listed equities and government stocks along with the growth of Nigerian economy as proxied by the GDP growth rate.

Caporale, Howlls and Soliman (2004) find a long-run relationship between banks' development as measured by banks deposit/ nominal GDP and claims on private sector/GDP along with the development of stock markets as proxied by the market capitalisation rate

and the ratio of traded value. Additionally, the study concludes that well-functioned stock markets play a vital role in accelerating GDP growth rate through allocating financial resources efficiently, and fostering the process of capital accumulation. To some extent (Beck and Levine, 2001) confirmed a positive impact that is running from the banks and stock markets to economic growth rate. Beck, Levine and Loayza (2000) proved that economic growth is significantly influenced by the development of financial intermediaries.

Similarly, Sbeiti, Bhuyan and Cader (2013) examined the role of financial sector and the stock markets' development in economic growth of Gulf region countries. Empirically, the study finds a positive relationship between the developments of financial sector along with economic growth. Additionally, the study induced that the financial market and the banking sectors are complementary to each other in the function of supplying financial services to the economies of these countries. By using a sample of ten MENA region countries, Bennaceur and Ghazouani (2003) examined the relationship of banks' development as measured by credit to private sector, and the development of stock markets as proxies by the turnover ratio and the value traded, along with economic growth. The results of GMM estimators' model revealed that economic growth of MENA region countries does not correlate with the development of banks or stock markets. However, after employing the variable of market capitalisation/GDP as a controlling factor, the study finds a negative relationship between banks and economic growth as measured by GDP per capita.

Seetanah, et al. (2012) employs a dynamic panel data model to examine the fundamental relationship between banks and stock markets' development along with economic growth.

By using a sample of ten developing countries during the period 1995-2009, the study finds a non-significant relationship between the development of stock markets and economic growth of emerging countries. However, the relationship between banks' development and economic growth is found to be positive.

A study by Levine and Zervos (1998) finds a positive relationship between the development of banking sector and the stock markets' liquidity. In addition, the results showed a positive relationship between the performance of banks and stock markets along with economic growth. The study, however, fails to define the potential determinants of banks and stock markets' liquidity. Therefore, the current study expects to be an important reference for stock markets' investors through providing them with important information regarding the potential determinants of the liquidity of banks and stock markets. Through employing a panel data covers the period 1991-2011, Ali and Aamir (2014) concerned with examining the relationship between stock market's development and economic growth as measured by the GDP per capita. As a result, the study showed a significant association between economic growth as measured by FDI, Investments, government expenditure to GDP, and gross domestic saving and the development of stock market as measured by stocks' traded and the market capitalisation.

3.5 Determinants of Investors' Decisions

The term 'investor's decision' is one of the most important concepts in the field of behavioural finance. The significance of this term comes from the role of investors' decisions to affect the performance of financial system, either negatively or positively. Thus, due to the

role of investors' decisions in the financial environment, many studies are conducted to identify the potential determinants of investors' decisions and saving behaviours. Some of these studies are categorised as shown below:

3.5.1 Determinants of Investors' Decisions

This section presents a critical appraisal of the previous studies, which focused on analysis the potential determinants of investment's decisions. These studies revealed that there are many demographic, financial, and macroeconomic as well as some other factors employed to identify the influencing variables of investors' decisions. In this regard, studies including Kaleem, Wajid, and Hussain (2009), attempt to identify the influential factors of the decisions of portfolio's managers. For this, purpose, the study develops a questionnaire composed of 44 statements. As a result, the researchers showed that factors like ages, level of education, income and language are considered as the most affecting factors in the decisions of Pakistani investors. However, the study has not defined the importance of market fundamentals like the TDIR, M/BV, P/E and the CPI in the process decisions making. In addition, the study shows a gap regarding the impacts of the recent global financial crisis on investors' behaviour. Therefore, the current research focuses on identifying the impact of market fundamentals in investors' decisions including the impacts of the 2007/8 financial crisis. Expectedly, this research will propose a roadmap to help investors in the process of making rational investment decisions.

A study by Yamin and Ali (2014) aims at identifying the influential factors on the stock prices of Jordanian commercial banks, over the period Q4/2002-Q4/2011. Results from

the multiple linear regression revealed that ratios including M/BV are significantly and positively impacting the stock prices of banks. The results also showed that the ratio of turnover and the number of transactions are positively affecting the stock prices of Jordanian commercial banks. The study recommends investors of Jordan to take these factors into the consideration before investing in the stock prices of Jordanian commercial banks. A study by Fares and Khamis (2011) focuses on elaborating the influencing factors of the trading behaviour of Jordanian investors. Empirically, results from the multiple regression tests revealed that factors such as investor's ages, experience of using the internet and the level of education are significantly affecting investors' trading behaviour.

Shafi (2014) tries to define the determinants of investors' behaviour in different countries, and the ways of how these factors influence the component of investment risk tolerance. In addition, the study tries to answer the main determinants of investment decisions between gender and different age groups. Thus, after reviewing various related studies, the researcher concluded that factors like investors' overreaction, cognitive bias, irrational thinking, level of confidence, gender, age, income, education, risk factor, dividends, people's opinions, firms' performance, accounting information, ownership concentration, bonus payments, expected returns, get rich quick are considered as the most affecting factors on investors' behaviour. On the other hand, factors including stock marketability, estimated losses in the global financial markets, firm's ethics, diversification, inflation rate, trading opportunity, publicity, and board of directors, social responsibilities, brand perception, economic expectation and the control orientation are found to be the least determinants for investors' behaviour.

Shaban and Al-Zubi (2014) aim at determining the role of financial information to rationalise the decisions of ASE's investors. For this purpose, the researchers distributed around 150 questionnaires to a selected sample of ASE's investors. Through using empirical techniques like partial least square 'PLS', the study finds that financial indicators like M/BV ratio and P/E ratio are significantly influencing the decisions of Jordanian investors. In addition, the study showed that factors like the cash flow/sales ratio, cash flow/assets ratio, assets turnover ratio, debt/assets ratio, ROA and ROE ratios play a significant role in determining the decisions of ASE investors.

Mojgan and Ali (2011) investigated the impact of EPS and DPS in investment decisions in Tehran stock exchange. Consequently, the study revealed that EPS and DPS play a central role in encouraging Persian investors to invest in stocks. Through administering a questionnaire and distributing it for a sample includes 500 equity investors, Nagy and Obenberger (1994) examined the effect of thirty four variables on the process of investment decision making. As a result, the study found that the variables of expected earnings, diversification needs and minimizing risk are deemed as the most influential variables of investor's decisions. Comparatively, Azam and Kumar (2011) pointed out that factors like E/P, FDI and the real GDP are significantly affecting the stock index of Karachi stock market's as a proxy for investors' behaviour. However, the above studies have not investigated the impact of market fundamentals on investors' decisions as proxied by banks and stock markets' liquidity. In addition, there is no evidence to explain investors' behaviour due to the impacts of the 2007/8 financial crisis.

By using variables like profit expectations and the level of confidence, Anderson and Goldsmith (1997) try to examine the Keynesian's theory, which argues that variables such as profit expectations, level of confidence and the weight of profit forecasts are able to determine investment decisions. The study formulates two questions to collect a quarterly data from 125 corporate executives. The first question is what are your expectations for your own industry during the coming six months? And the second one concerns of what is your assessment for the current circumstances of your industry compared with six months ago? The outcomes of the Ordinary Least Square test revealed that when industries managers are more optimistic and confident in their expectations that lead to increase the industries' investments.

Cianci (2008) mentions that according to psychologists, when investment decisions become more complicated and include higher levels of uncertainty, these decisions will be greatly influenced by investors' feelings and emotions. Conversely, Iyer and Baskar (2002) argue that the successful investors usually will be able to cope with negative psychological effects. However, these studies have not explained the role of financial and macroeconomic indicators like the TDIR, M/BV ratio, P/E ratio and inflation in the process of decisions making. Through developing a questionnaire encompasses around twenty one items, Shanmugasundaram and Jansirani (2012) focus on analysing investors' behaviour towards market factors like expansion plans, dividends disclosure, stock split, merger announcement and bonus issue. Consequently, the study proved that though investors behave rationally towards the market information, sometimes the low-self confidence in investment knowledge restricts them from making optimal investment decisions. How-

ever, the study shows a gap regarding the impact of deposit interest rates and M/BV ratio in the liquidity of banks and stock markets.

Norman (2012) aims to determine whether or not the investors of Tanzanian stock market rely on financial information to make investment decisions. After categorising investors into three groups 'small, medium and large investors', the results revealed a direct interaction between the levels of investment and financial information. The study claims that compared with small and medium investors, large investors are highly relied on financial analysis and financial statement when deciding to invest in the stock markets. However, the study has not analysed the impact of financial factors like the TDIR, M/BV ratio, P/E ratio and inflation on investors' decisions as measured by the liquidity of banks and stock markets. In addition, the study has not explained investors' behaviours towards the impacts of the recent financial crisis.

Gunathilaka (2014), attempts to determine the major influencing factors in investors decisions, in the Colombo stock exchange. His results suggest that the process of decision making is mainly driven by variables like firm perceived value, market-awareness, financial information, friends and family recommendations, expectations towards the political conditions and economy, past prices, dividends, firm's good will, dogmas and religions. However, the study reports that investor's decisions don't relate to factors such as age and gender. Moreover, the study infers that the investors of Sri Lanka are conservative investors due to their limited knowledge regarding the mechanism of financial markets. Anyway, the study has not explored the role of market fundamentals in the process of decision making. Through filling this gap in literature, the current research will contribute in the

existed knowledge by extending the available literature that is focused on the field of behavioural finance.

Mayes (2013) tried to determine the investment strategies, which U.S investors rely on to make buying or selling decisions. Theoretically, the study reveals that the investment decisions of American investors mainly rely on classical investing theories. These theories include financial and technical analysis techniques, the theory of efficient market, the momentum and persistence indicators, as well as ratios such as M/BV and E/P. The results revealed that the decisions of U.S investors depend on a set of behavioural biases factors like loses aversion, social interaction, available information, tax matters, overconfidence and the extent to which investor is optimistic or pessimistic regarding the company performance.

Some other studies tend to explore the impact of companies' specific factors on the process of decision making. In this context, Al-Tamimi (2006) explains the impact of companies' specific characteristics on investors' decision. Consequently, he finds that the willingness to be rich, stock marketability, expected returns, stock's past performance, the creation of unparalleled financial markets are considered as the most influential factors of investors' decisions. On the other hand, factors like expected losses, the need to alleviate investment risks and estimated losses in global markets, opinions of family, and feelings toward the country's economy are the least. However, since the available statistics showed that market fundamentals like the TDIR, M/BV ratio, P/E ratio and the CPI fluctuated considerably, the current study is only focused on identifying the impact of market fundamentals like the TDIR, M/BV, P/E and the CPI in the decisions of Jordanian investors.

Indeed, some of the previous studies have concerned of determining the impact of company specific characteristics in the process of decisions making, however, since the available statistics showed that variables like the TDIR, M/BV, P/E and the inflation are fluctuated considerably, the current research is only focused on using secondary data in order to identify the determinants of investors' decisions. Similarly, since the decisions of Jordanian investors are captured by using the liquidity of banks and the ASE, the current research focused on employing secondary data instead of developing a questionnaire. In other words, since the liquidity of banks and the ASE are measured through using numerical data, it is more accurate when the determinants of the liquidity of banks and the ASE are measured numerically as well.

In a further research, Al-Tamimi and Kalli (2009) formulated a questionnaire to identify the main determinants of investors' decisions. As a result, they showed a significant correlation between the financial literacy and investors' decisions. Their results consider the firm's reputation, religious reasons, firm's ethics, and diversification as the most influencing factors on the decisions of financial markets' investors. However, variables including family's opinions, rumours, facility of borrowing, and friends' recommendations are the least effective factors on the decisions of the United Arab Emirates' investors. Anyway, the researcher does not explain the impact of market fundamentals in investors' decisions as proxied by banks and financial markets' liquidity. Thus, the current research aims to fill this gap in literature through identifying the role of TDIR, M/BV ratio, P/E ratio, and inflation in shaping investors decisions. Findings of this study will help investors to invest their funds efficiently. Additionally, the current research will help money authorities to manage and improve the levels of liquidity in the financial system. Consequently, since a

well functioned financial system supports economic growth through allocating funds efficiently, results from this research will spur economic growth and developments.

Along similar lines, Obamuyi (2013) elaborates the most influential factors on the decisions of Nigerian investors. The results stated that factors such as stocks' past performance, anticipated stock's split, dividends policy, estimated returns, and get rich quick are found to be the most affecting factors on investors' decisions. Nevertheless, determinants like religion, loyalty to the firm outputs, rumours, opinions of family and the estimated losses are considered as the least influencing factors on investors' decision. Additionally, the study reveals that demographic factors, such as gender, age, qualification as well as marital status are significantly impacting the behaviour of Nigerian investors.

According to Jagongo and Mutswenje (2014) factors like expected returns, profit and the condition of financial statements, firm's reputation, firm's status in the industry, company's past performance, price per share, expected dividends, and feelings toward the economy are the most influencing factors on investors' decisions. Though the study's period covers the period of the recent financial crisis, the researchers have not explained investors' behaviours towards the impacts of this crisis. Thus, to fill this gap, this research will measure the impacts of the 2007/8 financial crisis on investors' behaviour. This will help investors to make rational investment decisions during both the stable and the unstable financial periods.

In an attempt to identify the determinants of investors' behaviour, Gour (2013) distributes a questionnaire on a sample of 100 retail investors of Rohtak city. The results show that investors' decisions are mainly influenced by friends' recommendations, financial state-

ments, dividend policies, advertisements, behaviour of institutional investors, and the foreign markets' crises. However, the study not only does not define the role of market fundamentals like the TDIR, M/BV, P/E and inflation in the process of decisions making, but also it shows a gap regarding the impacts of the 2007/8 financial crisis on investors' behaviour. After distributing 36 questionnaires, Harsha and Kerav (2012) documented that variables like companies' market capitalisation, and past performance are the most influential factors on investor decisions in Vadodara and Ahmedabad. By contrast, factors such as conversation of views with professional colleagues, and the fluctuations in markets' indices are the least effective determinants of investors' decisions. The study concludes that the stock market's performance mainly relies on investors' decisions.

On the other hand, Chang, Ng and Yu (2008) investigate the impact of investors' current positions paper gains or losses on investors' decisions as measured by the using of management forecasts. As a result, the unfavourable forecasts have a greater impact on investors' decisions than favourable forecasts. Further studies including Krishnan and Booker (2002) argue that factors like type of analyst recommendations 'favourable or unfavourable' and the strength of the supporting arguments in recommendations 'strong or weak' are jointly affecting investors' decisions in regard to buy or sell stocks.

Acosta and Loza (2005) examine the impact of macroeconomics' indicators on the private investment's decisions in Argentina, over the period 1970-2000. Empirically, in the short-run the results indicated that the investment decisions are significantly affected by exchange rate, inflation rate, trade liberalisation and the changes in levels of aggregate demand. While, over the long-run the study showed that investment decisions are highly

influenced by credit to private sector and external debt. The study also reports that investors' expectations are significantly impacted by the debt position with the rest of the world. Anyway, the study shows a gap regarding the importance of time deposit interest rates and M/BV ratio in the process of decision making.

During the period 1981-2011, (Osundina and Osundina, 2014) employ a multiple linear regression analysis and modified Mundel-Flemming's models to examine the relationship between interest rate, and investment decisions. These decisions are measured by the GDP growth rate, investments spending, government spending, debt volume and the exchange rate in Nigeria. Consequently, their results showed a positive relationship between GDP, exchange rate and government debt along with the rate of interest. Alternatively, the study shows a negative correlation between interest rate and government expenditure. However, the relationship between interest rates and the investment spending is insignificant. By contrast, Mckinnon and Shaw (1973) argued that the rates of interest are positively associated with savings, capital accumulation, level of investments and economic growth. However, both studies have not measured the impact of the TDIR, M/BV, P/E and the inflation on investors' decisions as measured by the liquidity of banks and the stock markets. In addition the current research will explain investors' behaviour towards the impacts of the 2007/8 financial crisis. Consequently, that will help investors to distribute their money efficiently in the financial institutions of Jordan.

3.5.2 Determinants of Saving Behaviour

There are numerous studies carried out to identify the influential factors of saving behaviour. In this regard, a study by Hebbel, et al. (1992) concentrates on determining the most influential factors of saving's behaviour in ten developing countries. Their results showed a positive relationship between people income and wealth along with the saving behaviour of households' investors. However, variables like foreign saving, inflation rate, time deposit interest rates and monetary assets are negatively correlated with the saving behaviour. By contrast, Beck, Levine and Loayza (2000) failed to determine the relationship of the income levels, wealth and real interest rate along with the rates of private saving. However, the inflation rate is found to be positively impacting the saving behaviours. The study also shows a positive correlation between the development of banking sector as measured by private credit along with the GDP growth per capita and the productivity growth per capita. Further results revealed a non-significant association between banks development and the saving rates.

Similarly, Ozcan, Gunay and Ertac (2003) aimed to identify the potential determinants of saving's behaviour, over the period 1968-1994. Empirically, their results showed a positive correlation between saving deposit interest rate, inflation rate, income level, credit to private sector and M2, along with the private saving behaviour. However, the results documented a negative correlation between the government saving's rates and the private saving behaviour. The relationship between the income growth and the rates of saving is insignificant. In a later study (2012) the same researchers confirm that the Turkish saving behaviour is positively influenced by the deposit interest rate, inflation rate, income level,

terms of trade, credits, the ratio of young dependency, urbanization's rates, economic crisis and political stability. Similarly, the study documented a non-significant association between the private saving rates and the income growth. However, although both studies shed the light on measuring the relationship between different types of interest rates and saving behaviour, these studies have not measured the direct relationship of TDIR, M/BV, P/E ratio and the inflation along with investors' decisions. Thus, to fill this gap in literature this research aims at evaluating the impact of market fundamentals on investors' decisions as measured by banks and the stock market's liquidity. Consequently, the current study will provide investors with an investment roadmap to help them in making rational investment decisions.

Kaberuka and Namubiru (2014) aim at determining the main factors which are affecting the gross domestic saving behaviour in Uganda. Thus, by analysing a quarterly time series data covers the period Q1/1999-Q4/2011, the study shows a negative relationship between the Ugandans saving behaviour and remittances. Nevertheless, factors like real deposit interest rate, exchange rate, GDP per capita, and inflation rate are positively impacting the saving behaviour. Through identifying the main determinants of savings behaviour in five south Asian countries in 2005-2006, Agrawals, Sahoo and Dash (2008) find a positive relationship of the saving behaviour along with the income per capita, GDP growth rate per capita and banking density as proxies by the number of banks' branches per million. On the other hand, factors including the dependency rate, the government saving and foreign savings rates exert a negative impact on the saving behaviour. Additionally, the study demonstrates a weak correlation between the saving rates and deposit interest rates.

By using a time series data covers the period 1989-2012, Ojeaga and Odejimi (2014) defined the impact of fixed interest rate and a set of exogenous variables on customers' saving behaviour. Consequently, the findings of the quintile regression's model revealed that variables like fixed interest rates, money supply and the average income are positively influencing the Nigerian saving behaviour. On the other hand, variables including commercial lending, legal right strength and the annual losses of commercial banks don't influence the deposits of banks as a proxy for saving behaviour.

A study by El-Seoud (2014a) directed to define the major determinants of private saving rates in the kingdom of Bahrain in 1990-2013. Empirically, results from the regression analysis showed that the private saving behaviour is positively affected by the deposit interest rate, growth rate of real income, public saving rate, inflation rate and financial depth (M2). The current account's deficit, tariff rate and terms of trade exert a negative impact on the saving behaviour. In addition, the study shows a non-significant correlation between the saving behaviour along with the exchange rate and the ratio of age dependency. In a further research, El-Seoud (2014b) examined the impact of inflation rate, the nominal interest rate and the GDP growth rate on the saving rate of Bahrain. Consequently, the researcher finds a positive interaction between the saving rates of Bahraini inhabitants along with the GDP growth rate, the inflation rate and the interest rate. In these two studies the researcher did not assess the impact of the TDIR, M/BV, P/E ratio and the inflation on investors' decisions. The studies also show a gap regarding the impacts of the 2007/8 financial crisis on investors' behaviour as measured by banks and stock market's liquidity. Through filling this gap, the current research will provide a comprehensive framework to

help investors, financial advisors and policy makers to rationalise their decisions based on the prevailing economic status.

Liberda and Tokarski (1999) examine the relationship between economic growth rate and the saving rate in Poland in 1990. The study confirms a negative association between the saving rates along with the unemployment rate, budget deficit, personal income's taxation and the percentage of population who are over 65 or below 19. Conversely, the results reveal a positive association for the growth of income disposal, balance of current account, GDP per capita along with the saving behaviour. In addition, the study indicates that in the long run, the GDP growth rate in Poland is linked with the growth rate and saving behaviour of the OECD countries. Anyway, the study has not measured the impact of deposit interest rates and M/BV ratio on investors' decisions.

A study by Jongwanich (2010) empirically examines the potential determinants of household and private saving behaviours in the period 1960-2004. His results suggested that variables like the real interest rates, economic growth, inflation rate and terms of trade exert a positive impact on saving behaviours. Nevertheless, variables like bank credits, dependency ratios; public saving and corporate savings are negatively affecting the rates of private saving. The researcher captured the saving behaviour through employing factors like the household + corporate saving/gross national disposal income and the behaviour of household saving as measured by the household saving /GNDI.

3.6 Determinants of Investment Decisions in the Amman Stock Exchange

Investment decisions are defined as a set of organised functions aim to increase the original amount of the invested capital (Siam and Al-Thaher, 2015). Actually there are many factors, which are affecting the decisions of ASE's investors. These factors are summarised as shown in figure 11:

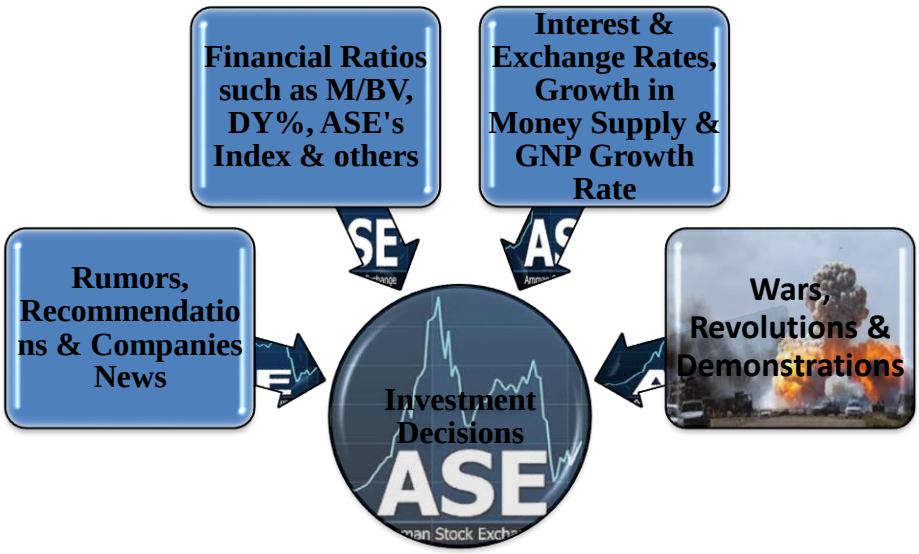

Figure 11: Determinants of Investment Decisions in the ASE[65]

3.6.1 Market Fundamentals

The review of literature revealed that there are a set of fundamentals variables, which are considered to be important to the process of decision making. For instance, literature including Al-Amarneh, Al-Kilani and Kaddumi (2011) reports that Jordanian investors prefer to invest in companies with low M/BV ratio, large capitalisation stocks, low trade fre-

[65]**Sources:** Shaban and Al-Zubi, 2014; Al-Qudah, 2013; Al-Zu'bi, 2000; Flanders Investment and Trade (2014); Al-Horani and Haddad (2011).

quency, good financial performance and low annual return. However, investors' decisions are not formulated by using factors like the dividend yield and the stock volatility as measured by the standard deviations of the daily prices. Tarashev, Tsatsaronis and Karampatos (2003) argue that the price of any financial asset reflects investors' attitudes towards the possible future inflows. Thus, since ASE's investors prefer to invest in companies with low M/BV ratio, their attitudes can be categorised as risk averse investors. Al-Habasheneh, et al. (2014) states that stock prices in the ASE are positively affected by factors, such as dividends, trading volume and the ratio of earning per share.

Al-Qudah (2013) finds that the stock prices in the ASE are significantly influenced by the M/BV ratio. In addition, the study recommends that it is preferable for Jordanian investors to rely on this ratio to make their investment decisions. Furthermore, the Jordanian securities commission recommends investors of Jordan to use factors like P/E, MB/V, price/operating cash flow 'P/OCF' and dividend yield ratio 'DY%' in the process of decision making (ASE, 2014). However, there is no evidence to support the fundamental relationship of M/BV with the market liquidity. Shaban and Al-Zubi (2014); Yamin and Ali (2014) find that variables like the M/BV ratio, P/E ratio, cash flow/sales ratio, cash flow/assets ratio, assets turnover ratio, debt/assets ratio, ROA and ROE ratios play a significant role in determining the decisions of Jordanian investors. However, Ali (2016) concluded that the volatility in the M/BV ratio does not impact the decisions of Jordanian investors. A study by Bader and Malawi (2010) focused on finding the impact of real interest rate on the level of investment in Jordan. Through using the Johansen technique the study found a negative relationship between the interest rate and the level of investment.

On the other hand, the relationship between the levels of investment is found to be positively impact the level of investment.

Abbad (2012) pointed out that Jordanian companies and investment portfolio managers depend on the ASE's index to make investment decisions, while ordinary investors don't. In addition, the study indicates that the stock index is mainly affected by the stock prices of the Arab bank[66]. Al-Radaideh, Abu-Assaf and Al-Nagi (2013) advised that it is essential for ASE's investors to make investment decisions, by using variables like the trading volume, news and financial reports because they affect the stock prices of the ASE.

Through distributing a questionnaire to a sample encompassing 76 commercial bank officers, Siam and Al-Thaher (2015) find that around 64% of participants do not rely on the information of financial statements to make investment decisions. However, the study confirmed that information from the financial statements play a vital role in rationalising the decisions of Jordanian investors. Furthermore, variables like the operational revenues are classified as the most influential factor of investment decisions. A study by Hadad (2012) reports that in an attempt to make rational decisions, in ASE a majority of expertise investors compute the fair value of stock's prices based on three main equations. These formulas are shown in the following table:

[66] Is one of the largest financial institutions in the Middle East and it has the highest market capitalisation in the ASE, where it represents 28% of the ASE (Musmar and Hudairi, 2013).

Table 3.1: Fair Value Equations

Panel A: This table shows the major adopted formulas for assessing the intrinsic value of stock prices in the ASE.

No.	Equation	Description
1	P/E*EPS	P/E relates to MV/ stock return for the industry & the EPS refers to the company earning per share.
2	P/BV*BVPS	P/BV relates to M/BV for the industry & the BVPS refers to the company BV per share.
3	DPS/ (DY %)	DPS relates to the company's dividend per share & the DY% refers to the industry's dividends.

Source: Hadad (2012)

Moreover, Hadad (2012) added that after calculating the average of the above ratios, investors tend to compare this average with the current market price. After that some expertise investors prefer to apply the technical analysis[67] in order to make their investment decisions. Authors like Abbad, Fardousi and Abbad (2014), see the technical analysis as an effective method to predict the directions of stock prices in the ASE, and generating lucrative buy and sell signals.

Furthermore, studies like Al-Zu'bi (2000) revealed that market fundamentals like the interest rate, exchange rate, growth in money supply and the GNP growth rate are positively

[67] Techniques such as charts, head and shoulders and trading volume are considered as the most suitable technical tools for emerging markets, such as the ASE (Hadad, 2012).

influencing the stock index in the ASE. However, since Abbad (2012) stated that the investment decisions in Jordan highly relies on the ASE's index, that means the process of decision making is affected by macroeconomic factors. Al-Khatib and Al-Shara's (1994 cited in Abbad, 2012) mentioned that the market prices and stock's returns in the ASE are significantly related to the deposit interest rates, exchange rates, money supply, and growth rate of national production, and the standard record of industrial production. Alabedallat and Alshabib (2012) found that the investment levels in Jordan and the GDP growth rate are significantly impacting the performance of the ASE as measured by the stock index.

Moreover, the above discussion revealed that there are a set of market fundamentals which are considered to be important to the decisions of Jordanian investor. However, since the available statistics showed that variables such as the TDIR, M/BV ratio, P/E ratio and the inflation are fluctuated considerably, the current research is concerned of assessing the impact of market fundamentals like the TDIR, M/BV, P/E and the inflation in the decisions of Jordanian investors. However, by the end of 2006, the Jordanian securities commission recommends the investors of ASE to rely on the M/BV ratio in order to evaluate their investment decisions. Thus, since there is no evidence to support the impact of this ratio in the liquidity of the Jordanian commercial banks and the ASE, the current research used this ratio in order to explain the role of the M/BV ratio in the process of decision making, over the period Q1/2000-Q4/2014. Beyond that in 2004 the decline of deposit interest rate in Jordan was resulted in enhancing the performance of ASE through increasing the NOT, TOR, VT and the TV. Therefore, in order to investigate if this relationship is really existed; the current research used the TDIR as another fundamental variable in

order to achieve the study aim and objectives. Additionally, since variables like the P/E ratio and the inflation fluctuated considerably, the study will also assess the impacts of the fluctuations in these two variables in the decisions of the Jordanian investors.

3.6.2 Political Events

In common with the MENA's developing economies, the economy of Jordan was negatively impacted by the Arab spring crisis[68]. For instance, the country GDP jumped down by -3.3% in 2011 towards 2012. The tourism[69] arrivals grew negatively by -22% in 2010-11. The foreign investment's inflow plunged by -11% in 2011. The foreign currency' reserves plunged by 46%, during the period 2010-2012, as well as the unemployment rates increased from 12.5% to 12.6% (DOS, 2014; CBJ, 2015; Masetti, et al., 2013; Pinner and Symons, 2012). However, due to the impact of this crisis on the confidence of Jordanian investors, the latest statistics revealed that the market value of the ASE slumped by 3.5 billion during the period 2010-2011. The stock index went down by 15.9%[70], the trading volume by 41.7% and the traded value by 2.374[71] (US Department of State, 2012).

However, as mentioned by a Flanders Investment and Trade's published report (2014) after the Arab spring's crisis was sparked in Syria, many Syrian businessmen entered Jordan through viewing it as a safe investment environment with a clear investors' legislation. In

[68]A political crisis sparked in neighbouring countries such as Tunisia, Egypt, Libya, Yemen and Syria, when the vegetable vendor "Mohamed Bouazizi" "burned himself in the Tunisian town of Sidi Bouzid on 17th/ Dec/ 2010.

[69] The tourism sector contributes in the country GDP by 12%. Thus, due to the sharp decline in this sector, the weak export, and the increase in import bills, which are caused by the higher global prices of food and oil; the country's current account's deficit was widened by 20% (DOS, 2014;CBJ, 2015; Masetti, et al, 2013; Pinner and Symons, 2012).

[70]From 2374 points in 2010 to 1995 by the end of 2011

[71] The traded value turned down from $9.5 billion in 2010 to $4 billion in 2011.

addition, the report mentioned that the Iraqi war positively influenced the performance of the ASE. In 2004, the stock exchange witnessed the highest level of trading[72] since it was established (Jordan-06-08). In a nutshell, since researchers including (Abbad, 2012; Al-radaideh, Abu-Assaf and Al-Nagi, 2013) report that the investment decisions in Jordan depend on the performance of ASE's index and trading volume, it can be concluded that the region's political situations play a vital role in the process of decision making.

3.6.4 Other Factors

Through administering a questionnaire and distributing it for a sample of 94 Jordanian individual investors, (Al-Sawalqa, 2012) finds that the individual investors in Jordan, ranked the corporate annual reports as one of the most important sources of information to make investment decisions. That is followed by the published magazines and newspapers, company websites, the recommendations of friends and brokers and rumours. In addition, the study indicates that Jordanian individual investors are very vigilant in making investment decisions, as well as they prefer to depend on companies annual reports. Likewise, Al-Horani and Haddad (2011) confirmed that the investment behaviour of ASE's investors is affected by rumours[73], mimicking attitude[74] and overconfidence bias. Furthermore, the study shows that 40% of the Jordanian investors are found to be conservative when they

[72] Traded value increased from $2.6 billion in 2003 to $5.35 billion in 2004.
[73] When Jordanian investors hear positive rumours, around 21% of them are found to be aggressive buyer, while 47% of them tend to sell stocks patiently. On the other hand, if these are rumours are negative, 12% sell stocks aggressively, nevertheless 53% they tend to buy it cautiously.
[74] 72% of Jordanian investors follow the market, without knowing the causes of increase or decrease in prices. However, 83% of them imitate the investment behaviour of other investors.

hear good news, 37% are conservative when they receive bad news. However, 60% of investors decide to purchase or sell securities instantly when they hear any fresh news.

In 2014, the Stock exchange of Amman reported that it is important for investors to enrich their investment background before making investment decisions. That can be achieved by following the news of the ASE, companies' published reports or through asking for advices from financial advisors or expertise investors. Thus, since this dissertation was mainly designed to identify the determinants of investors' decisions, the study findings will help investors of Jordan to enrich their financial background, and the investment culture. Subsequently, that will help them in making rational investment decisions.

3.7 Determinants of the Amman Stock Exchange's Performance

According the chairman of ASE, the performance of ASE is influenced by the set of the following factors:

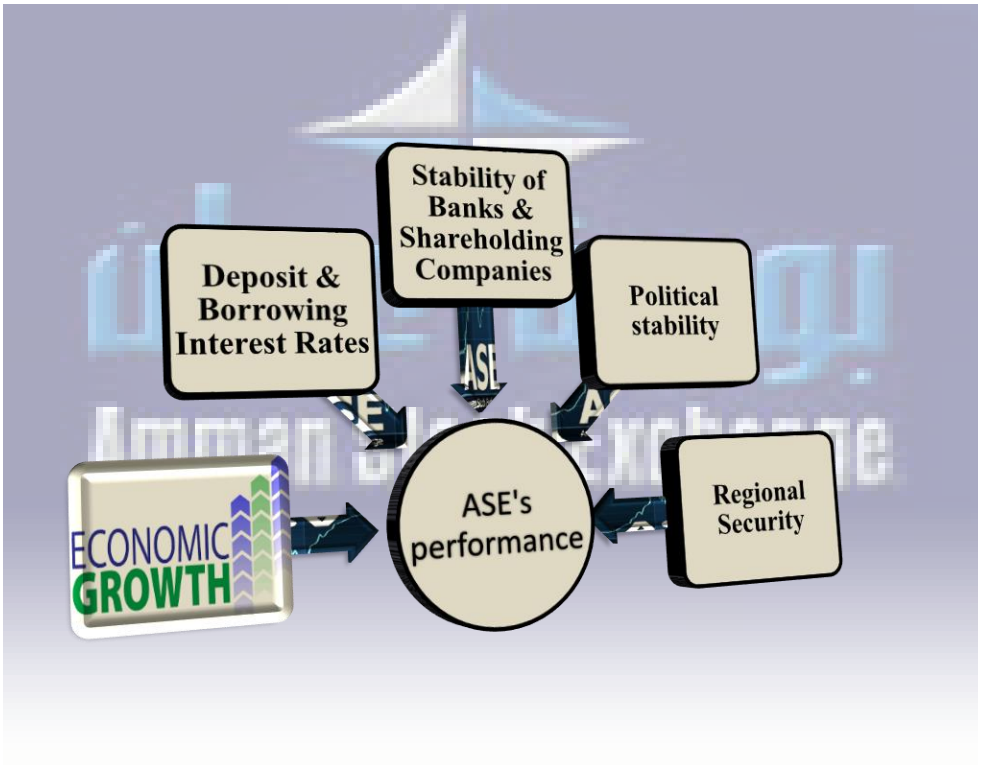

Figure 12: The most influential factors on the performance of ASE (Hourani, 2004).

According to Hourani (2004) the factors which are mentioned in the above figure, play a vital role in making the year of 2004 as a special period. In this period, the performance indicators in the ASE broke the records. Compared with the previous year, the price of the stock index rose by 62%, the traded value increased by several folds reaching up to JOD 3.8 billion, and the number of traded shares exceeded 1.3 billion. The number of executed contracts recorded 1.2 million; the market capitalisation went up by 68% 'amounting JOD 13 billion', the net of foreign investment increased to JOD 150.9 million compared with JOD 81.9 million in the last year.

In addition, to create a fair and efficient market, at the end of 2004, the ASE developed its website in order to strengthen the policies of disclosure and transparency. This new web-

site was considered as one of the greatest resources for researchers, investors and all the other interested parties. Subsequently, the website had around 40 million visitors per month. In 2005 this official site was classified as one of the best financial websites in Jordan. Furthermore, to provide investors with the needed information for investment decisions, on Sunday June 5th/2005, the ASE started to publish the opening and closing prices of the traded securities within its daily bulletins (ASE, 2014).

3.8 Global Financial Crisis: Causes and Implications

Although there is no widely accepted definition for the term 'financial crises', the available literature showed a general consensus to define the financial crises as dramatic imbalances in government balances, followed by a failure in major financial institutions due to the deterioration in their balance sheets. Subsequently, the panic of these institutions might be extending to other financial sectors (Al-Tarawneh, 2012). However, since each crisis has its own causes and characteristics, academicians and international financial organisations including the IMF, are focusing on identifying the common reasons for sparking economic imbalances. For example, the International Monetary Fund (2014) reports that:

"The Key causes of crises are varied and complicated. On the one hand, these causes can be domestic factors, such as weak monetary and fiscal policies can lead to huge economic imbalances such as massive amounts of external and public debt, fiscal and current account deficits, an exchange rate pegged at inappropriate level that can lead to continuous current account deficit and a fragile financial system which can create economic booms and busts. On the other hand, they can be external that includes shudders ranging from

natural catastrophes to large swings in the prices of main commodities, such as food, metal or oil, and spill-overs of economic and financial crises in other countries". However, Mishkin, Matthews and Giuliodori (2013) summarise the major causes of financial crises as shown in figure13:

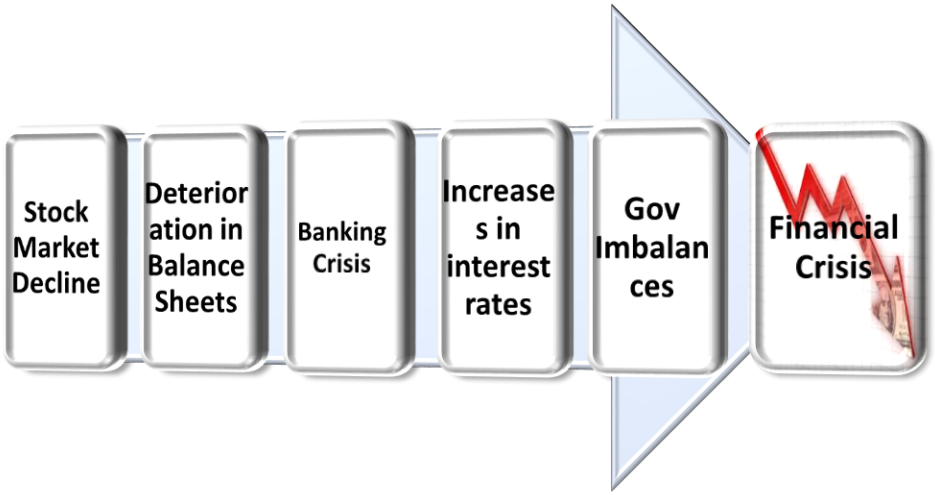

Figure 13: Causes of Financial Crises

- **Stock Market Decline**

Since the decrease in the performance of stock markets leads to a decline in the net value of traded companies, providers of funds will be less willing to lend. Subsequently, the volumes of investments and the aggregate output will decline.

- **Deterioration in the Balance Sheets of Financial Institutions**

The banking sector plays a vital role in improving the performance of financial markets. Therefore, the decline in banks' balance sheets leads to decrease the lending activity. As a

result, that will deteriorate the volumes of investment spending as well as weaken economic activity.

- **Banking Crisis**

Since the decline in banks' balance sheets stimulates depositors to withdraw their funds, the levels of interest rates will increase due to the shortage of loanable funds. Subsequently, economic activity will decrease.

- **Increases in Interest Rates**

When the decrease in money supply drives interest rates up, only firms with bad credit risks will be willing to borrow. Thereby, if lenders choose not to lend, that will decrease the volumes of investments as well as economic activity.

- **Government Fiscal Imbalances**

Government fiscal imbalances may create fears of default on government debt, which in turn decreases citizens' willingness to buy government bonds. However, if governments force financial institutions, such as banks and investment banks to buy its bonds, that will affect the balance sheets of these institutions, and weaken their lending activity; especially, if the value of these bonds declined. In addition, fears of governments' default leads to spark a foreign exchange crisis. For example, if foreign investors pull their money outside

the country, that will decrease the value of the local currency against the other foreign currencies.

3.9 The Impact of Financial Crisis on MENA's Economies

This section is designed to explain the impacts of the 2007/8 financial crisis on the economies of MENA's region countries. However, the main focus is drawn to discuss the impacts of the recent financial crisis on the economy of Jordan.

According to a UNICEF's published report (2009), emerging economies like Jordan, Lebanon, Egypt, Occupied Palestine, Syria, Morocco and Tunisia, are highly exposure to the changes in the international economy, in terms of exports, imports, financial aids, FDI and workers' remittances. Generally speaking, this crisis resulted in decreasing the amounts of FDI, remittances and financial aids in these countries. Therefore, the economies of these countries have not stood away from the impacts of this crisis. By contrast, the report argues that despite the considerable increase in the prices of foods and fuel in Q1/2008, and the slowdown in the second quarter, the economy of Jordan remains favourable with a real GDP growth rate averaged around 5.5%.

Moreover, Ahid and Augustine (2012) examine the impact of the global financial crisis on the performance of Jordanian economy within two stages. The earliest stage extends from Autumn 2008 to the end of December 2008. The second phase spans from December 2008 until the end of 2011. As a result, the study reports that since the economy of Jordan heavily relies on importing foods, fuel and a set of other commodities, it was impacted due to

the increase in the prices of these products. However, the study reported that the banking and tourism sectors have not affected by this crisis. The reason behind that is the limited integration of these sectors with the sectors of the global markets. Additionally, the CBJ played a vital role to mitigate the impact of this crisis, and that was through imposing strict regulations on the banking sector[75]. However, in consistent with the UNICEF's report, the study finds that this crisis exerted a significant impact on the country's remittances, whereas they plunged from 20% in 2005 to 14% by the end of 2009. However, though the study explained the impact of this crisis in the behaviours of Jordanian consumers, there is no evidence to support the impact of this crisis on investors' behaviour as measured by the liquidity of the Jordanian commercial banks and the ASE. Additionally, the study also did not focused on comparing the impacts of the fluctuations in market fundamentals in the decisions of Jordanian investors. To fill that, the current research is initiated to assess the impacts of the fluctuations in the TDIR, M/BV, P/E and the inflation in the decisions of Jordanian investors. The study will also compare the impact of these variables in the decisions of Jordanian investors, before, during and after the 2007/8 financial crisis. So, from another aspect the current research aims at evaluating the impact of the 2007/8 crisis in the behaviour of Jordanian investors as measured by the liquidity of the Jordanian commercial banks and the ASE. In this research, the liquidity of banks is typically measured by using the LATA, LATD, TLTD, and the TDTA ratios. On the other hand, the liquidity of the ASE is captured by using the TOR, VT, TV and the NOT. Thus, through achieving the aim of this research, the findings are expected to rationalise the decisions of Jordanian investors during both the stable and the unstable financial periods. As a result, that will be positively linked with economic growth and development.

[75] To assist the Jordanian banking sector in hedging against the epidemic of this crisis, the CBJ provides the sector with guidelines about loans' policies.

Consistently, Abu-Aliqah and Al-Rfou (2010) developed a questionnaire to measure the impact of the global financial crisis on the behaviour of Jordanian consumers. The study found that 63% of the respondents shifted to purchase suitable priced goods, while, around 61% prefer to buy essential goods rather than luxury goods. In addition, the results showed that 57% of respondents claimed that they only able to purchase small quantities of goods. However, due to the crisis's impact on the prices of foods and other commodities, the study argued that 71% of respondents disagreed to shift from consumption to saving.

Paradoxically, Alnajjar, et al. (2010) investigated the impact of the recent financial crisis on the Jordanian financial sector in general, and on its constituent fields particularly. For this purpose, the researchers developed a comprehensive survey encompasses a sample of the listed financial companies, over the period 1st/Jan/2008- Dec/ 2009. Consequently, the study finds that though the economy of Jordan, such as other developing economies was adversely impacted by the crisis, the lack of modern financial instruments in the ASE mitigated the impact of this crisis. Further results revealed that the listed financial sectors recorded a considerable decline due to the decline in the banking sector's index. This index slumped from 5319.50 in 2008 to 3646.76 points in 2009, with a total loss amounting 1672.74 points. That is followed by the index of real estate sector, which is declined from 8017.30 to 3131.03 points, with a total loss of 4886.27 points. The index of insurance sector dropped from 3670.00 to 3837.97 points, with a total loss amounting 832.03 points. Moreover, the study concluded that the impact of this turmoil on the performance of Jordanian banking sector resulted in deteriorating the performance of the ASE. Table 3.2 in appendix B, p. 454, shows a summary statistics regarding the performance of the sub-

financial sectors in the ASE, during the crisis period. However, the study has not examined the effect of the 2007/8 financial crisis in the behaviour of the Jordanian investors as measured by the liquidity of ASE, and Jordanian commercial banks. The study also shows a gap regarding the impact of the fluctuations in market fundamentals in the liquidity of banks and the stock market.

Continually, Al-Zyadat and Al-Kharabsheh (2013) administer a questionnaire to measure the impact of the global financial crisis on the performance of ASE, and the listed banking sector. The study reveals that the global crisis influences the performance of the ASE as monitored by stock prices, and the turnover ratio. In addition, the higher interest rates resulted in decreasing the stock prices and the lending activity of the Jordanian commercial banks. However, the study has not measured the impact of the 2007/8 financial crisis on banks' liquidity as a proxy for investors' behaviours. Therefore, this research utilised the liquidity of banks and stock markets to compare investors' behaviours before, during and after the 2007/8 financial crisis. This will in turn help investors to rationalise their investment decisions in the stable and the unstable financial periods.

A study by Neaime (2012) finds that the impact of the recent financial crisis on the financial markets of MENA's countries varies based on the level of their integration with the developed stock markets, like the EU and the US stock markets. The study shows that this crisis resulted in decreasing the assets prices, exports; FDI as well as it increased the cost of capital in the MENA region countries. However, since a majority of MENA region countries highly relied on the FDI and exports to recover the budget deficit, the study shows that countries including Egypt, Jordan, Kuwait, Morocco and the United Arab

Emirates were adversely impacted by this crisis. However, the study has not explored the impact of this crisis on investors' behaviour. This research will empirically provide investors with a framework to guide investors in the process of decision making.

Similarly, Mashal (2012) measures the impact of the financial crisis on the economies of Arab countries, over the period 2008-9. The study argues that the impact of this financial turmoil varies based on the nature of these economies and their integration with the global economy. Thus, after categorising the Arab countries into three groups, the study revealed that this crisis was weakly impacted the economies which have low integration with the international economy. However, the third group encompasses Jordan, Syria, Tunisia, Lebanon, Egypt, Morocco and Mauritania. The results showed that since the performance of banking and financial sector of this group heavily relies on the local lending, there is no direct association between the global financial crisis and the performance of banking and financial sector of these countries. However, the study has not explored the impact of this crisis on the liquidity of banks and stock markets as main proxies for investors' behaviours. Therefore, the current research aims at investigating the impact of the recent financial crisis in the liquidity of the Jordanian commercial banks and the ASE. According to this research, the liquidity of banks is measured by using the LATA, LATD, TDTA, and the TLTD ratio. On the other hand, the market liquidity was typically captured by using a set of trading activity measures like the TOR, NOT, VT and TV. Moreover, through achieving the aim of this research, the findings are expected to help investors to make rational investment decisions. However, Al-Zu'bi (2013) argues that the economy of Jordan is vulnerable to external shocks due to the strong linkages with the Arab world, the US and the European economies.

Consistently, Al-Nessor (2008) confirms that the impact of this crisis differs from one country to another, based on their association with the world economy. However, though the impact of this crisis on Arab banks was limited, the study reveals that the overreaction of Arab financial markets stimulates foreign investors to withdraw their investments from the Arab markets. Anyway, the researcher here has not elaborated the impact of this crisis on investors' behaviours as measured by the liquidity of banks and the stock markets. Therefore, the current research will provide empirical evidence to understand investors' behaviours towards the impacts of the 2007/8 financial crisis. Consequently, that will help investors to allocate their financial resources efficiently, as well as avoiding the impact of future financial crisis. However, Al-Halalmeh and Sayah (2010) examine the impact of foreign investment on the stock prices of the Amman Stock Exchange. For this purpose, the study developed a questionnaire and distributed it to a sample consisted of one hundred investors. Consequently, the study argues that since foreign investment forms 45-50% of the market value, the financial crisis was significantly influenced the stock prices in the ASE. See table 3.3 in appendix B, p. 456, for the size of foreign investments in the ASE, over the period 2006-9.

Asongu (2013) aims to evaluate the impacts of the global financial crisis on the developing financial markets. For this purpose, the study focused on measuring the relationship of the returns of the US stocks index 'Dow Jones Industrial' with the returns of stock indices in developing economies. The results show that the impact of this crisis was relatively varied. Specifically, the study proves that this crisis had a significant impact on the financial markets of Asian countries, such as India and Dhaka. This crisis weakly influenced the stock markets of countries like Peru, Venezuela, Columbia, and the Latin American.

However, regarding the stock markets of the African continent, and the region of MENA's counties, the study reveals that the financial crisis was averagely affected the stock indices of Namibia, Nigeria, Morocco, Dubai, Jordan, Israel, Saudi Arabia, Oman, Lebanon and Kenya.

A majority of MENA's economies highly relied on worker's remittances to cover the budget deficit. Therefore, the review of literature states that the 2007/8 financial crisis impacted the economy of Jordan, through impacting the amounts of workers remittances. According to Central Bank of Jordan's published reports (2009 and 2010) the 2007/8 crisis was adversely impacted the economy of Jordan due to the decline in workers remittances. Specifically, the amounts of Jordanian workers' remittances decreased by 12% in July/2009 compared with the same month in 2008. In 2010, the amounts of Jordanian remittances increased by 2%, compared with the same month last year.

According to a UNICEF published report (2009) the economy of Jordan is considered as the second-highest receiver of remittances after Lebanon. In Jordan, the worker remittances contribute in the GDP growth by 20%. Maziad (2009) states that since the economy of Jordan heavily relies on foreign aids, and workers' remittances; the growth in remittances plays a vital role through helping the economy of Jordan to overcome its recent difficulties. In other words, the increase in cash flow as a form of foreign currencies is considered as an important source to finance the economy of Jordan and to cover the budget deficit.

Zeitun and Benjelloun (2013) employ a data envelopment analysis model to measure the efficiency of twelve Jordanian banks, over the period 2005-09. The study utilised three

models those are calculated by relying on the options of constant return scale (CRS) and variable return scale (VRS). As a result, the study revealed that only a few banks were efficient in monitoring their financial resources, or generating profits. A majority of Jordanian banks were inefficient in managing their resources, or generating profits. However, results from the ANOVA analysis test showed that the financial crisis was significantly influenced the efficiency of Jordanian commercial and Islamic banks. Additionally, the study showed significant differences in banks performance (rank) before, during and after the global financial crisis. See table 3.4 in appendix B, p. 457, for the performance of the Jordanian banking sector, before, during and after the financial crisis. Anyway, the study has not identified the influential factors of the liquidity of banks and the stock markets. In addition, the study showed a gap regarding the impact of this crisis on investors' behaviours as proxied by the liquidity of banks and stock markets. Thus, to fill this gap in literature, this research aims at investigating the impact of market fundamentals on investors' behaviour, including the impacts of the 2007/8 financial crisis. The study's results expect to help investors in the process of making rational investment decisions.

Al-Rjoub (2011) focuses on evaluating the impacts the global financial crises on the behaviour of stock's returns in the Amman Stock Exchange as monitored by the ASE's index. These crises included the Mexico's Tequila crisis in 1994, the Asian and Russian crises in 1997-1998, the 9/11 attack, the Iraqi war in 2004, the financial crisis of Nov/2005 and the 2008/9 financial crisis. By using empirical techniques like GARCH-M model, the study finds that the global financial crisis and the Iraqi war have negatively influenced the stock index of the ASE. However, all the other crises have not impacted the stock index of the ASE. However, the study has not examined the impact of the recent financial crisis on

investors' behaviours as measured by the liquidity of banks and the stock markets. Therefore, by filling this gap, the current research will provide investors with important information regarding the process of making rational investment decisions, during both the stable and the unstable financial periods.

Onour (2010) focuses on estimating the impact of the latest global financial crisis on the capital markets of six major oil producing Gulf cooperation's countries. By using empirical techniques like the measures of value at risk (VRA) and expected shortfall (ES), the study finds that the impact of this crisis on stock markets as measured by stock indices was varied. For instance, the Kuwait's market is considered as the least affected market by this crisis. The market of Dubai was classified as the most respondent market to this crisis, with an increase in portfolio's losses from 18% pre-crisis period to 42% in the post period. That is followed by Muscat, Qatar, Abu-Dhabi and the Saudi market. In addition, the study finds that before the crisis period, the market of Saudi Arabia was the riskiest market with total losses up to 16% every 20 days. That is followed by the Qatar and Abu-Dhabi markets, respectively. However, the stock market of Muscat is considered as the least risky market in the pre-crisis period.

Habibi (2009) aims at identifying the impact of the global financial crisis on economies of developing countries. The study results show that this crisis was adversely affected Arab economies through many channels. For instance, this crisis resulted in decreasing the amounts of foreign investments inflows. It declined the stock prices of both the tourism and the real estate sectors. The decline in real states' stock prices led to increase the cases of mortgage defaults, as well as put the Arab banks under financial distress. However,

though the crisis was directly influenced the economies of Arab countries, the impact of this crisis was limited due to the low integration of Arab economies with the world economy. Furthermore, the study finds that oil importing countries like Jordan, were negatively impacted by this crisis. For instance, in the second half of 2008 towards the first half of 2009, the economy of Jordan witnessed a sharp decline in the amounts of investments inflows from oil producing countries such as Dubai or Qatar.

The IMF (2010) reported that countries of the Gulf cooperation council have not escaped from the epidemic of the recent financial crisis. These countries have impacted by this crisis through the dramatic decline in oil prices, and the levels of liquidity in the global financial markets. Consequently, that resulted not only in affecting the budgets of the governments of these countries, but also their external position was impacted by this crisis. However, since the economy of Jordan heavily depends on workers' remittances from the Gulf countries, the impact of this crisis in the Gulf countries, has led to decline the amounts of remittances which are supposed to inflow[76] to Jordan.

Nour and Sharabati (2014) evaluate the impact of the global financial crisis as monitored by the index of Dow Jones on the performance of Amman Stock Exchange as a representative for the economy of Jordan. By analysing a data set covers the period 1999-2014, the study shows a non-significant correlation between the performance of the ASE and the index of NYSE. In addition, the study reveals that the stock index of the NYSE 'Dow Jones' does not influence the performance of the ASE's main sectors (financial, services and industrial sector). Therefore, the study shows that the financial crisis was not impact-

[76] The workers' remittances contribute in the GDP of Jordanian economy by 20%. However, in 2009 the global remittances estimated to decline by 7-10%.

ed the economy of Jordan as measured by the performance of ASE. The study argues that though the crisis was started in 2008, the performance of ASE started to go down in 2009. Therefore, the study mentioned that though a majority of financial markets started to recover the effect of this turmoil within one to two years, the ASE still suffers until this moment 'delay impact and delay recovery'.

Lin (2014) reported that during the initial ages of the latest global crisis, the economy of Jordan was relatively well. However, when the global credits were tightened and the demand on exports was declined, the economy of Jordan failed to resist the impacts of this financial shock. As a result, the GDP growth declined to zero in 2008, compared with a positive growth in 2007. In addition, when the demand on industrial products declined, this resulted in a decrease in the prices of these products. Thereafter, the stock prices of the industrial sector started to fall during the period Q3/2008-Q4/2009. In addition, the amount of exports in the export-oriented sectors (the manufacturing, mining and the transport sector) was severely impacted by this financial turmoil. For instance, during the period Q1/2008-Q3/2009, the overall exports in Jordan declined by 15.6%.

Furthermore, the author stated that the economy of Jordan did not operate well after the crisis period. For instance, compared with the economies of Israel, Turkey and South Africa; the economy of Jordan had the largest scale ranking loss in the operating capital, market capital, financial capital and renewal capital. Consequently, after the crisis period, the economy of Jordan maintains having a fragile growth and high rates of unemployment. For instance, the statistics revealed that during the period 2011/2012, the reserves of CBJ declined from $ 11 billion to $12.3 billion. The public debt rose from $17.7 billion in

2010 to $19 billion in 2012. During the period 2010/12, the amounts of foreign direct investment dropped by 17.7%. The stock prices decreased by 12.6%, as well as the number of tourist arrivals experienced a dramatic decline with a proportion of 22%. Moreover, the deficit of the current account was widened.

However, since the above discussion revealed different opinions regarding the impact of the 2007/8 financial crisis on the economy of Jordan, the current research aims to fix these views through explaining the impact of this crisis in the behaviour of Jordanian investors as measured by the liquidity of banks and ASE. Expectedly, results from this research will provide a framework to help investors in the process of making rational investment decisions during both, the stable and unstable financial crisis. Eventually, that will positively impact economic growth and development.

3.10 The Study's Basis and the Gap in Literature

The current research aims at assessing the impact of market fundamentals in the decisions of Jordanian investors as measured by the liquidity of the Jordanian commercial banks and the ASE. Thus, since the decisions of Jordanian investors in this research, are mainly captured by using the liquidity of the Jordanian banks and ASE, the previous chapter was focused on discussing the Jordanian financial system and the development of the ASE. However, since the current research assumes that market fundamentals like the TDIR, M/BV, P/E and the inflation play a vital role in the decisions of Jordanian investors, the current chapter is constructed to explain the importance of these fundamental variables to the process of decision making. For instance, literature including Al-Amarneh, Al-Kilani

and Kaddumi (2011) reports that investors of Jordan prefer to invest in companies with low M/BV ratio. Shaban and Al-Zubi (2014) revealed that financial indicators like the M/BV ratio and the P/E ratio are significantly influencing the decisions of Jordanian investors. Additionally, authors like Finn (2006) mentioned that according to the value investment approach investors prefer to invest in stock prices, which are cheap compared with their "intrinsic value". Thus, to know whether a company's share is trading under or over its real value, investors must rely on effective techniques like the M/BV and the P/E ratios. In this context, authors like Helfert (2001) assumes that ratios like the M/BV and the P/E are considered as effective tools to evaluate whether the stock prices are trading under or over their intrinsic values. Relying on ability of the M/BV and the P/E ratio to evaluate the investment decisions, the current research assumed that the fluctuations in the M/BV and the P/E ratios are significantly impacting the decisions of Jordanian investors as measured by the liquidity of banks and the ASE. More specifically, this study postulates that the decrease in the M/BV and the P/E ratios motivates investors to invest their financial resources in the ASE, while the increase of these ratios is positively affecting the liquidity of the Jordanian commercial banks.

Anyway, since the current research focused on measuring the decisions of Jordanian investors through using the liquidity of the Jordanian commercial banks and the ASE, this chapter also concentrates on reviewing some of the previous studies, which are studied the potential determinants of the liquidity of banks and stock markets (e.g. Al-Ali and Kassem, 2013; Vodova, 2011a; Amador, et al., 2013). For more elaboration, the current chapter showed some of the previous studies, which are concerned of identifying the relationship between the liquidity of the stock markets as measured by the value traded and

turnover ratio along with the M/BV ratio (e.g. Ali, 2016). Studies like Wong and Fung (2002); Chordia, et al. (2010); Amador, et al. (2011) focused on assessing the impact of market fundamentals like the level of interest rates and the inflation in the stock market's liquidity as measured by the turnover ratio, trading volume and the value traded. However, these studies have not evaluated the impact of the interest rates or the inflation in the stock market's liquidity as gauged by the TOR, TV, VT and the NOT. Therefore, this study attempts to identify the impact of the fluctuations in market fundamentals in the liquidity of the ASE as measured by the TOR, TV, VT, and the NOT. The term "market fundamentals" in this research is mainly related to the TDIR, CPI, M/BV and the P/E ratio. Thus, through evaluating the impact of these variables in the decisions of Jordanian investors as measured by the liquidity of the ASE, the findings of this research will help investors to realise the role of market fundamentals in the process of making rational investment decisions. In addition, theories including the conventional economic reasoning assumed that the change in interest rates is negatively impacting the stock market's performance. Where, the increase in the interest rates motivates investors to deposit their funds into the banks instead of investing them in the stock markets. Thus, since the available literature has not evaluated the impact of the change in the interest rates in the Jordanian investors as measured by the liquidity of banks and the stock market, the current research aims to fill this gap in literature through assessing the impact of the fluctuations in market fundamentals in the decisions of Jordanian investors as measured by the liquidity of the Jordanian commercial banks and the Amman Stock Exchange.

However, studies including Shaban and Al-Zubi (2014); Yamin and Ali (2014) concerned of exploring the role of the M/BV as well as the P/E ratio in investors' decisions. Anyway,

these studies still show a gap regarding the impact of the fluctuations in market fundamentals like the TDIR, M/BV, P/E and the inflation in the decisions of Jordanian investors as captured by the liquidity of the Jordanian commercial banks and the ASE. Therefore, this research aims to fill this gap through measuring the impact of the TDIR, M/BV, P/E ratio and the inflation in the decisions of Jordanian investors as gauged by the liquidity of banks and the ASE. In this research the liquidity of banks is typically measured through using ratios like the liquid assets to total assets, liquid assets to total deposits, total loans to total deposits and the total deposits to total assets. Anyway, the critical appraisal of the previous related studies illustrates that the available literature only concerned of assessing the impact of variables like the interest and the inflation in the liquidity of banks as captured by the liquid assets/ total assets, total loans/ total deposits, liquid assets/ total deposits (Vodova, 2011a; Vodova, 2011b; Vodova, 2013; Malik and Rafique, 2013; Vodova, 2013; Alper and Anbar, 2011). However, though the available studies focused on identifying the potential determinants of the liquidity of banks, the review of literature still shows a gap regarding the impact of the fluctuations in market fundamentals like the TDIR, M/BV ratio, P/E ratio and the inflation in investors' decisions as captured by the liquidity of banks, which is measured by the LATA, LATD, TLTD and the TDTA ratio. Furthermore, the critical appraisal of the previous studies showed that there is no previous research focused on assessing the impact of the fluctuations in the M/BV or the P/E ratios in investors' decisions as measured by the liquidity of banks. Similarly, there is no research investigated the impact of the P/E ratio in investors' decisions as measured by the liquidity of the ASE. Therefore, the current research will fill this gap in literature through testing the impact of the P/E ratio in the liquidity of the ASE, which is captured by using the TOR, TV, VT and the NOT.

Furthermore, since the current research aims at measuring the impacts of the 2007/8 financial crisis in investors' behaviour, this chapter also focused on discussing the impact of this crisis in the economies of MENA region countries in general, while in the economy of Jordan particularly. Consequently, the discussion of the available literature showed a gap regarding the impacts of the 2007/8 in the behaviour of Jordanian investors as measured by the liquidity of the Jordanian commercial banks and the ASE (e.g. Mashal, 2012; Ahid and Augustine, 2012; Alnajjar, et al., 2010). Therefore, this research will investigate the impacts of the 2007/8 financial crisis in the behaviour of Jordanian investors as measured by the liquidity of the Jordanian commercial banks and the ASE. To sum up, since the review of the previous related studies showed a gap regarding the impact of market fundamentals and the 2007/8 financial crisis in the decisions of Jordanian investors, the current research aims to fill this gap in literature through assessing the impact of market fundamentals like the TDIR, M/BV, P/E ratio and the inflation in the decisions of Jordanian investors, which are captured by the liquidity of the Jordanian commercial banks and the ASE. In this research the liquidity of banks is typically measured by using the LATA, LATD, TLTD and the TDTA ratios. The liquidity of the ASE is gauged through using the TOR, NOT, TV, and the VT. Moreover, through evaluating the impact of market fundamentals in the decisions of Jordanian investors, the results of this study are expected to help investors to make rational investment decisions as well as extending the available literature that is focusing on investors' decisions and saving behaviour. After discussing the theoretical and empirical basis of this research, the study tried to explain the gap in literature as well as elaborating the main reasons behind selecting the variables of this research. However, relying on the above discussion the study assumed that the decisions of

Jordanian investors can be rational through adopting one of the following investment avenues:

1- When the time deposit interest rates and the inflation rise, investors tend to allocate their financial resources into the banks. However, when these fundamental variables decline over time, investors find it worthwhile diverting their financial resources into investment in the stock market instead.
2- The second way can be achieved when investors invest their funds in the ASE when the ratios of the M/BV and the P/E go down, or exploiting their money into the banks if these ratios go up.

To examine these above assumptions, the deductive approach was adopted. Thus, to discuss the reasons behind employing this approach, in the next chapter, the study moved on to discuss the research methodology, which is used to accomplish the study aims and objectives.

3.11 Chapter Summary

The previous chapter presented a critical appraisal for the fundamental relationships of macroeconomic variables with the performance of banks and financial markets. The majority of the previous studies confirmed a positive relationship between the interest rates and the inflation along with the performance of banks. By contrast, the relationship between interest rates and the performance of financial markets is found to be negative. However, to build a well theoretical and empirical framework, the chapter presented a

snapshot review for the previous studies, which are reviewed the potential determinants of investors' decisions and saving behaviour. Generally speaking, these studies showed a significant correlation between demographic, financial, and macroeconomic variables along with investors' decisions and saving behaviours. In addition, since the current research focuses on explaining the impacts of the 2007/8 financial crisis on investors' behaviours, the chapter moved on to discuss the impacts of the 2007/8 financial crisis in the economies of MENA's region countries in general. However, a great attention was paid to explain the impacts of this crisis on the economy of Jordan. In this context, the previous studies showed that the impact of this crisis on the developing economies was varied, based on the degree of their integration with the global economy, and the developed financial markets like the US and the EU financial markets.

Furthermore, the above discussion showed that none of the previous studies measured the impact of the volatility in market fundamentals like the TDIR, M/BV, P/E and the inflation in the liquidity of the Jordanian commercial banks and the ASE as main proxies for investors' decision. In addition, the previous studies revealed a gap regarding the impacts of the 2007/8 financial crisis in the behaviour of Jordanian investors as measured by the liquidity of banks and the ASE. Thus, by filling this gap in literature, the current research expects to extend the available literature that is focused on investors' decisions and saving behaviour. Additionally, the results of this study are expected to provide investors with empirical evidence regarding the role of market fundamentals to rationalise investors' decisions during the stable and the unstable financial periods. Tables 3.5-3.10 in appendix C, p. 459-472; show a summary for the previous studies, which are used in order to build the theoretical and empirical framework of this research. However, after discussing the previ-

ous related studies and identifying the gap in literature, in the coming chapter the study moved forward to explain the conceptual framework and the development of hypotheses, which are formulated to achieve the study's aims and objectives. The chapter also focused on comparing the available and the suggested conceptual frameworks in order to specify the gap in literature as well as showing the reasons behind initiating this research. After that the chapter proceeds to explain the research's philosophy, as well as the proposed plan to test the study's hypotheses.

Chapter Four: Conceptual Framework & Research's Philosophy

Chapter Four: Conceptual Framework & Research's Philosophy

Section one: Conceptual Framework and Research Hypotheses

4.1 Chapter Structure

This research is mainly designed to investigate the effect of the fluctuations in the weighted average TDIR and the average ratios of the ASE's M/BV and P/E as well as the inflation in the decisions of Jordanian investors, including the impacts of the 2007/8 financial crisis. Thus, to support the selection of the study's variables, the current chapter is divided into four sections. The first section focused on comparing the existing framework and the proposed framework in order to identify the main gaps regarding the impacts of market fundamentals in the decisions of Jordanian investors. Thereafter, the study moved on to discuss the developments of the hypotheses, which are formulated to achieve the study's aim and objectives. However, to support the selection of the study's methodology, the second section is focused on discussing the research's philosophy and design. In the third section, the study focused on explaining the definitions and the measurements of the study's variables, and eventually, the fourth section elaborated the methods of collecting and analysing the study's data. Moreover, the current chapter is organised as shown in the following figure 14:

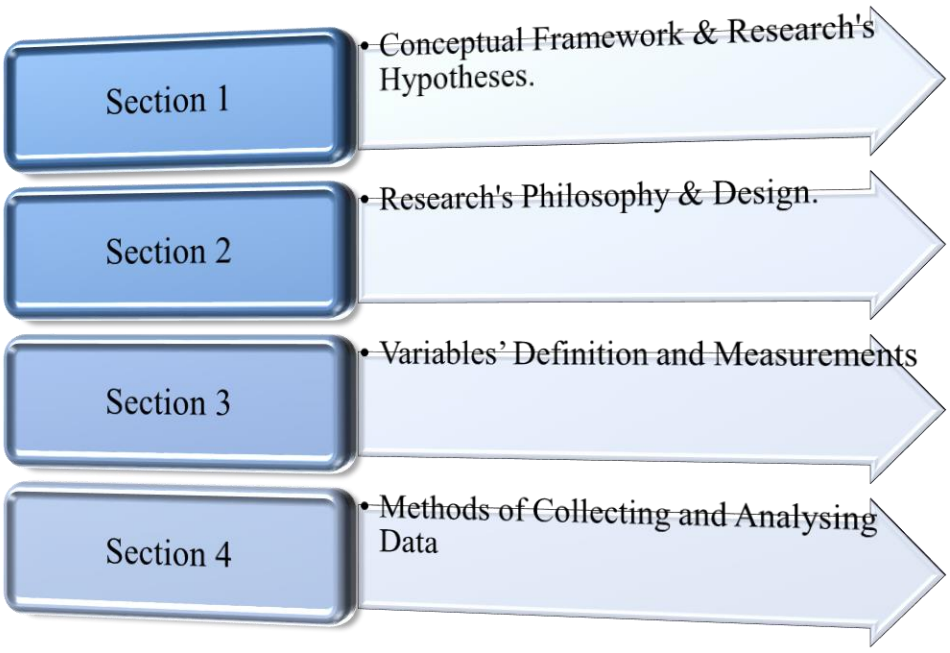

Figure 14: Research Philosophy and Design

The first section focused on discussing the available and the proposed framework, which is developed in order to assess the impacts of the fluctuations in market fundamentals in the decisions of Jordanian investors. Thereafter, the study moved on to discuss the hypotheses' developments. However, the second section focused on showing a brief discussion around the different philosophical assumptions. It also describes the reasons behind choosing the philosophy of this research. Thereafter, it focuses on elaborating the research strategy, which is adopted to answer the research's inquiries. The third section is concerned with portraying the study's data, sample selection and the variables' definition as well as measurements. In section number four, the chapter moved on to explain the statistical techniques, which are utilised to gather and analyse the study's data. Beyond that, the section focused on describing the econometric models and research's limitations. Finally,

the chapter was ended by a summary regarding the main points, which are discussed and covered by this chapter.

4.1 Introduction

The current research aims at assessing the impact of market fundamentals in the decisions of Jordanian investors. For this purpose, the previous chapter is constructed to discuss the available literature that is focused on investors' decisions and saving behaviour as well as the impacts of the financial crisis in the economies of MENA region countries. Consequently, the discussion revealed that though there are considerable studies focused on identifying the potential determinants of banks and stock market's liquidity, there is no evidence to support the relationship of the TDIR, M/BV, P/E ratio and the inflation along with the liquidity of banks and financial markets. Thus, to fill this gap in literature this research is mainly initiated to investigate the effect of the fluctuations in the weighted average TDIR and the average ratios of the ASE's M/BV and P/E as well as the inflation in the decisions of Jordanian investors. In this research, the decisions of Jordanian investors are captured by using the liquidity of the Jordanian commercial banks and the ASE. Moreover, to accomplish the core aim of this study, the first section is designed to discuss the gap in literature as well as the hypotheses' development.

Chapter Four: Conceptual Framework & Research's Philosophy

4.2 Conceptual Framework

This research mainly aims at investigating the impact of the fluctuations in market fundamentals like the time deposit interest rates, market-to-book value ratio, price to earnings ratio and the inflation in the decisions of Jordanian investors. In this research investors decisions are typically captured by using both the liquidity of the Jordanian commercial banks and the Amman Stock Exchange. The liquidity of banks is mainly measured by using four financial ratios like the liquid assets to total assets, liquid assets to total deposits, total deposits to total assets and the total loans to total deposits. On the other hand, the liquidity of the Amman Stock Exchange is gauged by using a set of trading activity measures such as the turnover ratio, value traded, trading volume and the number of transaction. Thus, in order to explain the main links between the available literature and the main goals of this research, the current research focuses on discussing the available conceptual framework that is focused on assessing the impact of the TDIR, M/BV, P/E ratio and the inflation in the liquidity of banks and the stock market. Thereby, the current research will be able to determine the main gaps in the available literature regarding the impact of market fundamentals in the decisions of Jordanian investors.

4.2.1 The Definition of Conceptual Framework

The current literature showed that there are many definitions, which can be used to relate to the term 'conceptual framework'. However, according to Miles and Huberman (1984, p.28) as cited in Marom (2010), the term 'conceptual framework' is defined as follows:

"A visual or written product that explains, either graphically or in narrative form, the main dimensions to be studied – the key factors, or variables – and the presumed relationships among them". Jabareen (2009) defines it as a "*network plan of linked concepts".*

4.2.2 The Importance of Conceptual framework

According to Marom (2010) a study conceptual framework is considered as one of the most important parts, which the researchers must concern about in order to explain the suggested relationships between the variables, which they are studying. For instance, since a study's conceptual framework explains the presumed relationships between the examined variables, it seems to be important to help us to formulate the study's hypotheses which will be tested in order to achieve the study's aim and objectives. Moreover, due to the importance of conceptual framework, the current research focused on explaining the available framework that is focused on assessing the impact of interest rates, M/BV, P/E ratio and inflation in the liquidity of banks and stock markets. Thus, through explaining the conceptual framework which relates to this research, the current study will be able to show the gaps in the available literature that is focused on assessing the impact of market fundamentals in the liquidity of banks and stock markets. Thereafter, the gaps in literature are expected to be filled through strengthening the weakness in the available conceptual framework that is focused on the impact of TDIR, M/BV, P/E ratio and the inflation in the liquidity of banks and stock markets. Moreover, since a study's conceptual framework should grow logically through relying on the available framework; the current research reviewed the available framework in order to build the conceptual framework of this re-

search. For instance, through reviewing the available conceptual framework, it is found that there is no previous study assessed the impact of the TDIR, M/BV ratio, P/E ratio and inflation in the liquidity of banks and the stock markets as main proxies for investors' decisions, or as measured by the LATA, LATD, TLTD, TDTA, TOR, VT, TV and NOT. Therefore, the current research aims to strengthen the available framework through evaluating the impact of market fundamentals like the TDIR, M/BV, P/E and the inflation in the liquidity of the Jordanian commercial banks and the ASE. In this study the liquidity of banks is typically measured by using ratios like the LATA, LATD, TLTD, and TDTA. On the other hand, the market's liquidity is captured by using measures like the TOR, NOT, VT, and TV. Moreover, to discuss the main gaps of the available literature, the current conceptual framework is explained as shown below:

4.2.3 The Current Conceptual Framework

Before moving on to explain the variables which are employed to answer the impacts of the fluctuations in market fundamentals in the decisions of Jordanian investors, it is essential to discuss the existed conceptual framework that is built by previous studies, which are focused on identifying the potential determinants of banks and stock markets' liquidity. Thus, the aim of the following discussion is to determine the main gap in literature regarding the impact of the TDIR, M/BV, P/E ratio and the inflation in the liquidity of banks and stock markets. The existed framework is illustrated as shown below:

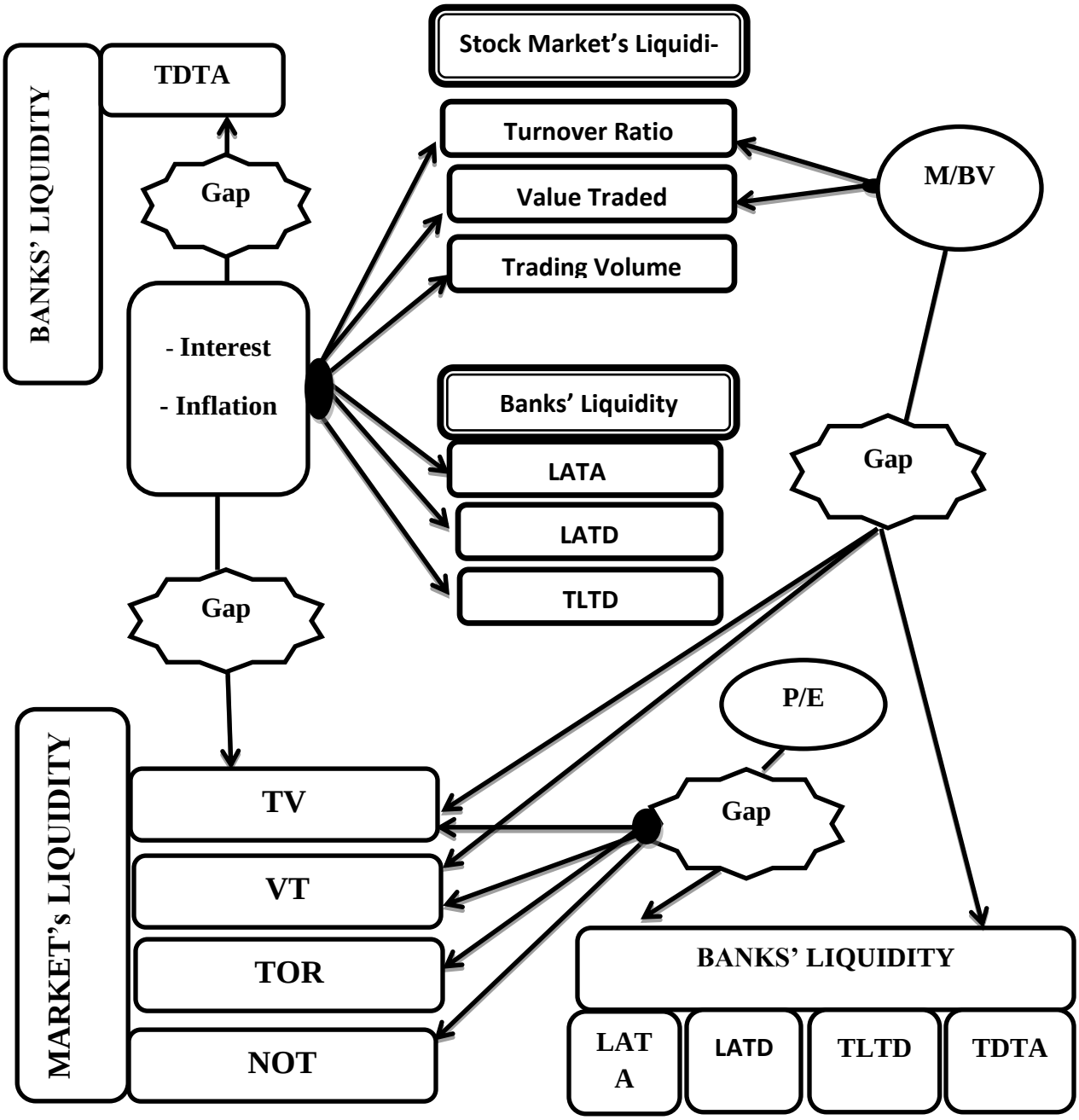

Figure 15: The Current Framework

The above framework shows that some of the previous studies are concerned with identifying the relationship between the liquidity of the stock markets as measured by the value traded and the turnover ratio along with the M/BV ratio (e.g. Ali, 2016). The framework also illustrated that some other studies are interested in assessing the impact of variables like the interest and the inflation in the liquidity of banks as captured by the liquid assets/ total assets, total loans/ total deposits, liquid assets/ total deposits (Vodova, 2011a; Vodova, 2011b; Malik and Rafique, 2013; Vodova, 2013; Alper and Anbar, 2011). Additionally, it is found that other researchers are concerned of evaluating the impact of the interest rates and the rate of inflation in the liquidity of stock markets as measured by the turnover ratio, value traded and the trading volume (e.g. Wong and Fung, 2002; Amador, et al., 2011). However, the above framework showed that there is no previous study which was conducted in order to assess the impact of the P/E ratio in the stock market's liquidity.

Although the available studies are concerned with identifying the potential determinants of the liquidity of banks and the stock markets, the above framework shows a gap regarding the impact of the weighted average time deposit interest rates, the inflation, and the ratios of the M/BV and the P/E in the decisions of Jordanian investors as captured by the liquidity of the Jordanian commercial banks and the Amman Stock Exchange. In this research, the liquidity of banks is typically measured by LATA, LATD, TLTD, and TDTA. On the other hand, the liquidity of the ASE's is typically captured by the turnover ratio, trading volume, value traded and the number of transactions. However, the above framework also shows a gap regarding the impact of the interest rates and the inflation on banks' liquidity as measured by the TDTA ratio, or on the stock market's liquidity as

gauged by the number of transactions. Additionally, studies like Ali (2016) only focused on measuring the impact of the M/BV ratio on the stock market's liquidity as measured by the turnover ratio and the value traded. Moreover, the above framework confirmed that none of the available literature measured the impact of the M/BV ratio or P/E ratio in the liquidity of the Jordanian commercial banks.

Furthermore, the above framework shows a gap regarding the impact of the fluctuations in market fundamentals like the TDIR, M/BV ratio, P/E ratio and the inflation in the liquidity of banks and stock markets as proxies for investors' decisions, which are measured by LATA, LATD, TLTD, TDTA, TOR, VT, TV and NOT. Therefore, the current research aims to fill this gap in literature through assessing the impact of market fundamentals like the TDIR, M/BV ratio, P/E ratio and the inflation in the decisions of Jordanian investors as measured by the liquidity of the Jordanian commercial banks and the Amman Stock Exchange. In this research the liquidity of banks is captured by variables like the LATA, LATD, TLTD and the TDTA ratio. On the other hand, the stock market's liquidity is typically measured by utilising measures like the TOR, VT, TV and the NOT. Thus, by achieving the main aim of this research, the results are expected to help investors to make rational investment decisions as well as extending the available literature that is focusing on investors' decisions and saving behaviours. However, since a study's conceptual framework should grow logically through relying on the available framework; the conceptual framework of this research was mainly developed through relying on the gaps, which are highlighted by the available framework. In other words, since the available framework showed some gaps regarding the impact of interest rate, market-to-book value ratio, price

to earnings ratios and the inflation in the liquidity of banks and the stock market, the current research is expected to fill these gaps through assessing the impact of the fluctuations in market fundamentals like the TDIR, M/BV ratio, P/E ratio and the inflation in the decisions of Jordanian investors as measured by the liquidity of the Jordanian commercial banks and the Amman Stock Exchange. Moreover, in order to explain the presumed correlation between the TDIR, M/BV ratio, P/E ratio and the inflation along with the liquidity of banks and the stock market, the following conceptual framework was proposed:

4.2.4 The Proposed Framework

This research employed the quantitative approach to measure the impact of the weighted average TDIR and the average ratios of ASE's M/BV and P/E as well as inflation in the decisions of Jordanian investors. However, since the variable of investors' decisions cannot be measured numerically, the indicators of both the liquidity of Jordanian commercial banks and the liquidity of Amman Stock Exchange are utilised. According to Bryman (2004, p. 66-67) if the variable cannot be measured directly, it should be indirectly measured through employing related indicators. Moreover, this section is designed in order to illustrate the conceptual framework that is constructed to explain the suggested relationship between interest rates, M/BV, P/E and the inflation along with investors' decisions as measured by the liquidity of the Jordanian commercial banks and the Amman Stock Exchange. Additionally, since a study's conceptual framework must be related to the suggested hypotheses and questions, the following figure shows that the study's framework

was also built based on the set of questions and hypotheses. These hypotheses are going to be discussed in the coming section of this chapter.

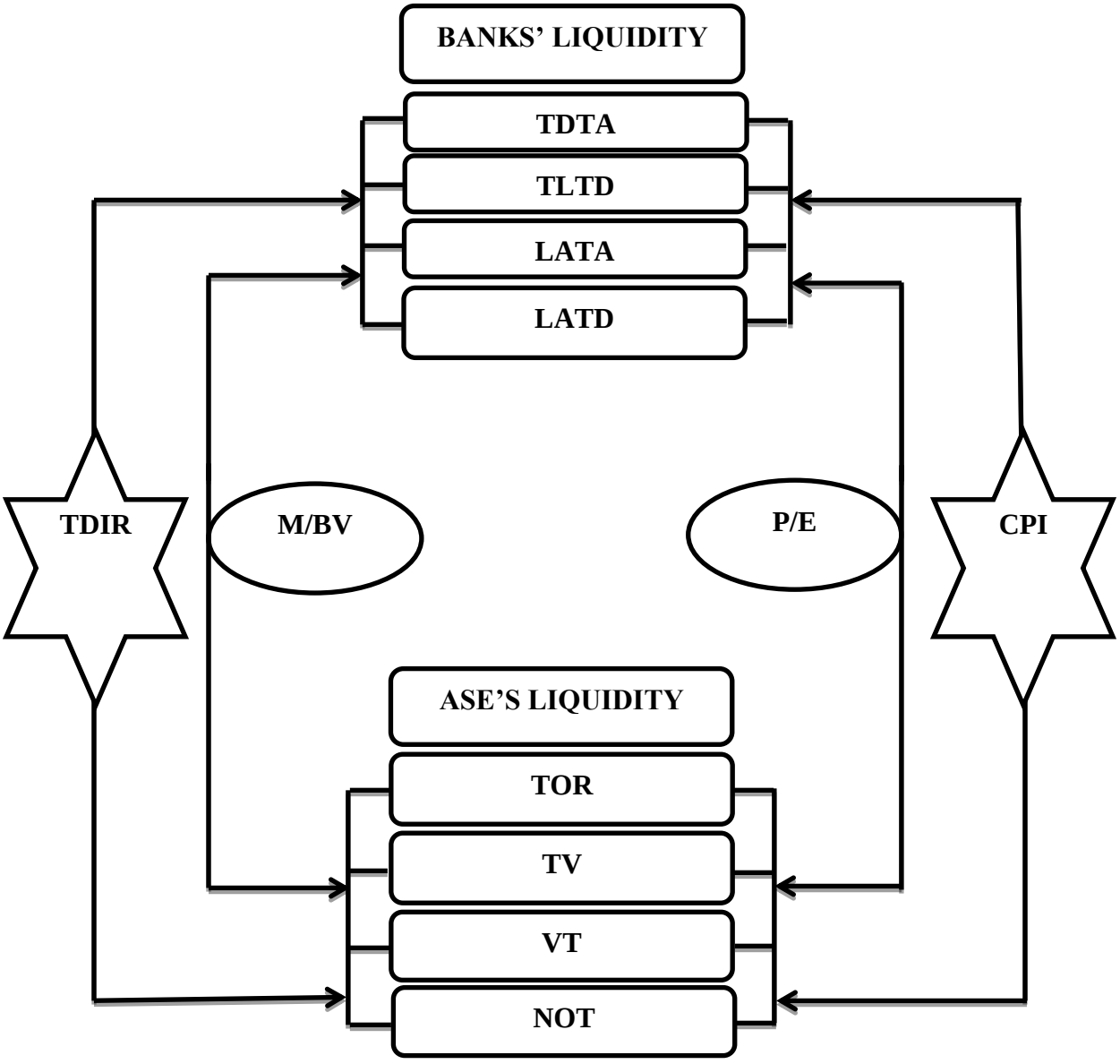

Figure 16: The Proposed Framework

The above framework assumes that fundamental variables like the TDIR, M/BV ratio, P/E ratio and the inflation had a significant effect in the liquidity of the Jordanian commercial banks and the ASE, over the period Q1/2000-Q4/2014. According to this research, the liquidity of banks is measured by using four ratios, including the total deposits to total assets, total loans to total deposits, liquid assets to total assets and the liquid assets to total deposits ratios. On the other hand, the liquidity of the Amman Stock Exchange is measured by utilising the turnover ratio, trading volume, value traded and the number of transactions. To examine the main assumptions of this research, the study employed a set of advanced empirical techniques like the multiple linear regression tests, ADF, the Johansen cointegration test, the VAR and the VECM tests as well as the two-way Anova test. Thus, by achieving that the current research expects to develop the available framework that is concerned of assessing the impact of the TDIR, M/BV ratio, P/E ratio and the inflation in the liquidity of banks and the stock markets. Consequently, that will help researchers as well as academicians to use the same framework in order to conduct further research to explain the main determinants of banks and the stock market's liquidity. Beyond that, the findings of this study are expected to help investors to make rational investment decisions. Moreover, relying on the gaps of the available literature, the main aim of this research will be achieved through testing four main and a set of sub-hypotheses. To test these hypotheses, the study used numerous empirical techniques like the ADF tests, regression tests, Johansen co-integration tests, the VAR and the VECM tests as well as the two-way ANOVA analysis tests. These tests will be discussed in the next section of this research.

4.3 Hypotheses' Development

This research aims to evaluate the impact of the fluctuations in the time deposit interest rates, M/BV ratio, P/E ratio and the inflation in investors' decisions. These decisions are captured by utilising the liquidity of the ASE and the Jordanian commercial banks. The liquidity of the ASE is typically measured by the value traded, trading volume, number of transaction and the turnover ratio. On the other hand, the liquidity of banks is gauged by using the total deposit ratio, total loans/ total deposits, liquid assets/ total assets and the ratio of liquid assets/ total deposits. However, since the development of national economies are heavily relied on the stability of the banking and financial system, there are intensive studies carried out to identify the potential determinants of banks and stock markets' liquidity (e.g. Ali, 2016; Vodova, 2011a and 2011b, Malik and Rafique, 2013; Al-Ali and Kassem 2013; Okoye and Eze, 2013; Wong and Fung, 2002; Chordia, Sarkar and Subrahmanyam, 2001). Some other studies focused on determining the influential factors on investors' decisions and saving behaviour (e.g. Shafi, 2014; Fares and Khamis, 2011; Gour, 2013; Hebbel, et al, 1992; Agrawals, Sahoo and Dash, 2008; Bogdan, Bareša and Ivanović, 2012; Shaban and Al-Zubi, 2014; Jongwanich, 2010). However, since the previous related studies have not examined the impact of the fluctuations in market fundamentals like the TDIR, M/BV ratio, P/E ratio and the inflation in the decisions of Jordanian investors, the current study will fill this gap in the literature through suggesting that the increase in the TDIR, M/BV ratio, P/E ratio and the inflation encourages investors of Jordan to deposit their money into the banks, rather than employing them in the ASE. By contrast, when these fundamental variables decline over time, Jordanian investors find it

worthwhile diverting their financial resources into investment in the ASE instead. Thus, to achieve the main aim of this research, the study formulated four main hypotheses. These hypotheses are discussed below:

4.3.1 First main Hypothesis

H_1: There is a significant effect in the fluctuations of market fundamentals on the decisions of Jordanian investors.

This hypothesis stipulates a positive relationship between the fluctuations in the time deposit interest rates, M/BV, P/E and the inflation along with the liquidity of the Jordanian commercial banks. Specifically, the increase in these variables is assumed to encourage investors of Jordan to deposit their money into the banks rather than employing them in the ASE. Nevertheless, the decrease in these variables is assumed to motivate investors to invest their money in the ASE, instead of depositing them into the banks. Based on this hypothesis, two further related hypotheses were formulated. These hypotheses are described below:

I. First Sub-Hypothesis

$H_{1.1}$: The fluctuations in the TDIR, M/BV ratio, P/E ratio and the inflation are positively affecting the liquidity of the Jordanian commercial banks.

To investigate the impact of the volatility in interest rates on the liquidity of banks as monitored by saving and time deposits, (Al-Ali and Kassem, 2013) assumed a positive relationship between the volatility in interest rate and deposit volumes. Malik and Rafique (2013) posit that macroeconomic variables including the interest rates and the inflation are significantly impacting bank's liquidity. Vodova (2013); Vodova (2011a) suggest a positive relationship between the interbank interest rate and inflation along with the liquidity of the Hungarian and Slovakian banks, while he stipulates a negative relationship between the interest rate on loans and banks' liquidity. Through examining the impact of banks' lending rate and monetary policy rate on the performance of Nigerian deposit banks, (Okoye and Eze, 2013) revealed positive correlations between interest rates and banks' earnings.

II. Second Sub-Hypothesis

$H_{1.2}$: The fluctuations in the TDIR, M/BV ratio, P/E ratio and the inflation are negatively affecting the liquidity of the Amman Stock Exchange.

Wong and Fung (2002) suggested a negative correlation between interest rates and the liquidity of the Hong Kong stock market as measured by the turnover ratio and the trading volume. Shaban and Al-Zubi (2014) assumed a significant relationship between the M/BV ratio, and P/E ratio along with the decisions of ASE's investors. Ali (2016) postulates that the volatility in M/BV ratio is negatively impacting the liquidity of the ASE. However,

Adekunie and Ojodu (2012) assume that the rate of inflation is significantly impacting the growth of the Nigerian stock market.

4.3.2 Second Main Hypothesis

$H_{2:}$ There is a long-run integration between the fluctuations in market fundamentals along with the decisions of Jordanian investors. This hypothesis is divided into two sub-hypothesis:

I. First Sub Hypothesis

$H_{2.1:}$ There is a long-run integration between the fluctuations in the TDIR, M/BV ratio, P/E ratio and the inflation along with the liquidity of the Jordanian commercial banks.

II. Second Sub Hypothesis

$H_{2.2:}$ There is a long-run integration between the fluctuations in the TDIR, M/BV ratio, P/E ratio and the inflation along with the liquidity of the Amman Stock Exchange.

4.3.3 Third Main Hypothesis

H_3: There is a significant long and short-run causality running from the fluctuations in market fundamentals to the decisions of Jordanian investors. This hypothesis is divided into four sub-hypotheses:

I. First Sub Hypothesis

$H_{3.1}$: There is a significant long-run causality running from the fluctuations in the TDIR, M/BV ratio, P/E ratio and the inflation towards the liquidity of the Jordanian commercial banks.

II. Second Sub Hypothesis

$H_{3.2}$: There is a significant long-run causality running from the fluctuations in the TDIR, M/BV ratio, P/E ratio and the inflation towards the liquidity of the Amman Stock Exchange.

III. Third Sub Hypothesis

$H_{3.3}$: There is a significant short-run causality running from the fluctuations in the TDIR, M/BV ratio, P/E ratio and the inflation towards the liquidity of the Jordanian commercial banks.

IV. Fourth Sub Hypothesis

$H_{3.4}$: There is a significant short-run causality running from the fluctuations in the TDIR, M/BV ratio, P/E ratio and the inflation towards the liquidity of the Amman Stock Exchange.

This research aims at investigating the impact of the fluctuations in market fundamentals like the TDIR, M/BV ratio, P/E ratio and inflation in the decisions of Jordanian investors. For this purpose the study applied the multiple regression tests in order to test the first hypothesis. However, since the current research employed a time series data in order to achieve aims and objectives, the ADF test is also applied to check for data stationarity. Thus, since the study's data are found to be non-stationary, tests like the VAR and the

VECM must be applied in order to ensure that we have not lost any long-run correlation that it maybe existed between the examined variables. Additionally, it is necessary to run these tests in order to avoid the problem of getting spurious regression results. Moreover, the second and the third hypotheses are formulated in order to check whether or not the variables are integrated on the long-run as well as to check if there are long or short-run causalities running from the fluctuations in market fundamentals towards the liquidity of the Jordanian commercial banks and the ASE.

4.3.4 Fourth Main Hypothesis

H_4: There are no significant differences between the decisions of Jordanian investors, before, during or after the recent financial crisis, due to the effect of the fluctuations in market fundamentals like the TDIR, M/BV, P/E and the inflation. This hypothesis is divided into two sub-hypotheses:

$H_{4.1}$: There are no significant differences between the liquidity of the Jordanian commercial banks, before, during or after the 2007/8 financial crisis, due to the impacts of the fluctuations in the TDIR, M/BV ratio, P/E ratio and the inflation.

$H_{4.2}$: There are no significant differences between the liquidity of the ASE, before, during or after the 2007/8 financial crisis, due to the impacts of the fluctuations in the TDIR, M/BV ratio, P/E ratio and the inflation.

Chapter Four: Conceptual Framework & Research's Philosophy

Since the current research looks at explaining the impacts of the 2007/8 financial crisis in the behaviour of Jordanian investors, the study period is divided into three stages. Thus, through comparing the impact of the TDIR, M/BV ratio, P/E ratio and the inflation in the decisions of Jordanian investors during these three stages, the study will identify the impact of the 2007/8 financial crisis in the decisions of Jordanian investors. For this purpose, the study employed the two-way Anova test in order to test the above hypotheses.

Chapter Four: Conceptual Framework & Research's Philosophy

Section Two: Research Philosophy and Design

4.4 Introduction

Logically, when humans live their lives out, or view the world by relying on certain beliefs and assumptions, that will significantly contribute in shaping the way they think, whether conducting research or whatever. Therefore, in the case of conducting research of this nature, it is essential to discuss the different thoughts of research's paradigms. Additionally, there is a necessity to discuss the epistemological and ontological assumptions as they contribute in underpinning the research' designs and strategies. In other words, since these different philosophical assumptions concern with the human knowledge, and the nature of reality, these assumptions play a vital role to impact the whole design, or the way of how researchers think of achieving the objectives of their studies.

Blaikie (2000) states that research's paradigms with their different philosophies are considered to be as a part of a set of philosophical choices. Thus, without linking the adopted paradigm with the research problem, the final work will be undermined due to the lack of coherence in the research's design. Furthermore, if researchers do not consider the philosophical commitments, which they have adopted in the phase of selecting research's strategy and design, that not only will influence what they study, but also the way of how they have understood what they are going to investigate (Saunders, Lewis, and Thornhill, 2012, p. 128).

As cited in Flowers (2009); James and Vinnicombe (2002) argue that as humans we all have inherent values, which influence the way of how we realise the surrounded world, or the way we think, while attempting to answer research questions. Moreover, since it is impossible to avoid this bias without selecting an appropriate study's philosophy and design, it is necessary to introduce the major research's philosophies. The main two research philosophies are discussed below:

4.4.1 Ontology

The term 'ontology' [77] is often used to relate to a major philosophical branch that is known as 'metaphysics' [78](Ingarden, 1964). As noted by Saunders, Lewis and Thornhill (2012, p. 130), the term 'ontology' refers to the way of how the world works[79] and the nature of reality. Researchers including Smith (2003); Blaikie (1993) claim that using this term in its border sense can be relate with studying what might exists, how it looks like, what units or materials shape it, and how these units relate or interact with each other 'synonym of metaphysics, or what comes after the Physics?' In other words, the ontological issue, which focuses on describing our understanding to the nature of social world, mainly concerns with the question do entities considered to be objective[80] or subjective[81]?

[77] It was formulated in the early of 1613 by "Jacob Lorhard in his Theatrum Philosophicum and Rudolf Gockel in his Lexicon Philosophicum" (Ingarden, 1964).
[78] This term was used by an early student of Aristotle that to relate to what he called himself 'first philosophy'.
[79]How can we understand the issue of existence?
[80] Are they really existed?
[81] That is created by imagination.

In line with the above discussion, the main debate between business and management researchers focuses on two ontological aspects to obtain a valid knowledge 'subjective and objective ontology'.

To organise this debate, and finding out whether reality can be existed just through experiencing it 'subjectivism' or it is independent of units who live it 'objectivism'. John[82] focuses on the issue of replacing all the old marketing managers of a chemical manufacturer 'ChemCo'. First of all the research considered new managers as the study's subjects and the management as a body with a separate reality from people who inhabit it. Thereafter, through adopting an objectivist ontological stance, the researcher revealed that the process of management will progress in the same way, in spite the issue of changing managers. Wilson (2014, p. 11) mentions that the ontological theory divides into two main positions. The first one is known as the objectivist paradigm, while the other is the subjectivist paradigm. According to the first position, the researcher should view the world without being in it. Like the positivist knowledge in the epistemological theory. Alternatively, when a researcher adopts the subjective position, he/she should view the world through being a part of it, and that is similar to the interpretivist paradigm in the epistemological theory.

However, since humans have a huge number of deeply embedded ontological assumptions that influence the way of viewing reality and its nature, it is impossible to avoid the impact of these inherent preferences, without knowing how to measure reality, what constitutes reality and knowledge or what is the suitable way to obtain a valid knowledge? To answer such these questions, the issue of epistemology is discussed below:

[82]A student researcher.

4.4.2 Epistemology

According to Chia (2002 cited in Flowers, 2009), the epistemological issue concerns with the question of 'how and what is possible to know'. Hatch and Cunliffe (2006) phrase it as 'knowing how you can know'. As cited by Ryan (n.d.) the term 'epistemology' concerns of studying the way of how people know things or thinking about knowing these things. Rev and Toohey (2007) define it as a "science of knowledge"[83]. However, from the philosophical perspective, this term is known as "the science of the certitude of human knowledge". Generally speaking, all of these definitions are focused on determining the way of obtaining an acceptable knowledge, or discovering what constitutes that knowledge (Flowers, 2009).

The main difference between social ontology and social epistemology is their positions towards the association between sociology and philosophy (Fuller, 2000). Since the assumptions of social ontology concerns with what constitutes reality 'the nature of reality', the principles of the second term concerns with the question of what constitutes a valid knowledge, or whether the social world can be studied by the same procedures, principles and ethos those are applied by natural scientists or not (Bryman and Bell, 2011, p.15). In other words, the ontology concerns of investigating whether reality really exists (objectivism) or it is an illusion (subjectivism) that is created by human minds. By contrast, epistemology aims to find out whether the valid knowledge can be attained objectively 'through depending on statistical techniques', or subjectively 'through presenting it as a

[83]It was derived from the two Greek words 'episteme' that relates to knowledge and 'logos' which refers to science (Rev and Toohey, 2007).

narrative'. Moreover, the main discussion sparking here is that whether social entities can be considered to be subjective or objective? According to Bryman and Bell (2011) these entities can be objective if they have an external reality[84]. Alternatively, they can be classified as subjective ontology if they are built-up through the actions and perceptions of social sectors 'social construction' (Bryman and Bell, 2011).

The above discussion leads us to the phase of research philosophy as it was defined by Saunders, Lewis, and Thornhill (2012), or the research paradigm as it is known by (Blaikie, 2000). According to Wahyuni (2012); Bryman and Bell (2011, p. 25), a research paradigm is a pattern of beliefs which influence the process of conducting social research, or a set of dogmas or dictates that impact what will be studied, how a research should be designed, or how its findings should be presented. According to the western tradition of science there are two major paradigms for transforming things believed into things known (Lindberg, 2007). Thus, since each of these paradigms relies on certain epistemological and ontological assumptions, a suitable research philosophy or design cannot be chosen without illustrating the principles of these approaches 'positivist and interpretivist'. Therefore, these two approaches are discussed below:

[84] The social phenomena face us as external facts, which are beyond our authority or influence.

Chapter Four: Conceptual Framework & Research's Philosophy

I. Positivism

In the seventeenths century, this term was established in western philosophy by a French professor called Auguste Comte[85] (Willis, 2007). Authors like Saunders, Lewis, and Thornhill (2012, p. 134); Livesey (2014) pointed that when researchers depend on a positivist philosophy to study the social behaviour, they will follow a philosophical position similar to that one, which is used by natural scientists when they study the behaviour in the natural world[86]. Since this epistemological position adopts a set of methods similar to those, which are used by natural researchers, it is difficult to obtain a valid knowledge, without relying on facts and value of reasons. These facts which will be gathered by experience, and observation, it will be used to generate valid hypotheses which can be examined and allow explanations of rules to be evaluated 'deductivism's principle or theory-testing approach' (Bryman and Bell, 2011, p. 15; Flowers, 2009). According to this approach, techniques like survey, questionnaire and random sampling are the typical methods for collecting data (Raddon, n.d.). In other words, to achieve a valid knowledge, the researchers of this position must depend on the available literatures to develop valid hypotheses those can be tested empirically by using experiments, survey, methods of statistical analysis and quantitative techniques[87] (Saunders, Lewis and Thornhill, 2012, p. 134; Blaikie, 1993; Livesey, 2014). According to this paradigm the social world is considered

[85] He has advocated a set of emerging sciences such as physics, astronomy and chemistry. Additionally, he was not only considered as the founder of sociology, but also he concluded that this field of human study should be relied on a robust scientific foundation (Willis, 2007).

[86] The researcher is a scientist

[87] Statistical techniques are generally favoured because they are allowing for the collection of factual data.

to be thoroughly objective and external 'the positivist researcher is objective and external from the process of data collection'[88]. Livesey (2014) reports that the researchers who adopt this approach should not be interact with people directly, because this might impact their behaviour 'non-participant observation is preferable'. Thus, since the researcher of this paradigm is regarded as value neutral, the issue of adjusting the substance of the collected data is difficult. Similarly, Healy and Perry (2000) reports that since the data and its analysis are value-free and the data cannot be changed because they are being observed, the researcher who holds this position views the world through a 'one mirror'. Saunders, Lewis and Thornhill (2012, p. 134) define this kind of researchers as 'resources researchers'[89]. While, the researcher who concerns with impressions rather than facts, he can be known as feelings or interpretivist researcher[90] (Saunders, Lewis and Thornhill, 2012, p. 134).

In a nutshell, the main assumption of this philosophy is that the researcher is a scientist who depends on measurement, correlation and statistical techniques to explain how and why things happen. The researcher also concerns of using scientific techniques to examine human experiences. Raddon (n.d.) reports that for a well understanding of the underlying phenomenon, researchers rely on observation and experiment. When people, organisations and cultures operate individually, that means they are objective social entities. According to the positivist paradigm when researchers do not involve themselves in reality construc-

[88] Reality exists independent from the observer.
[89] Resources researcher: is a positivist researcher concerns with facts instead of impressions. *"These facts are consistent with the theory of observable social reality. This theory is similar to that one which is adopted by natural and physical scientists".*
[90] Because they are embedded from the process of data collection

tion, they should employ measurement to obtain a valid knowledge 'quantitative approach'. Authors like Bryman and Bell (2011, p. 23-27), mentioned that the quantitative strategy is committed to the positivist epistemology.

II. Interpretivism

The proponents of this paradigm argue that the study of the social world is completely different from natural sciences. Specifically, the techniques of social research differ from those which are used by the researchers of natural sciences (Bryman and Bell, 2011, p. 15). Alekseev (2010) mentioned that this paradigm depends on investigating and understanding the world phenomena from individuals' perspectives, or the cultural context that people inhabit. Anyway, in an attempt to link the position of interpretivism to relativism[91], (Scotland, 2012) finds it difficult to understand the social world without participating in it. Similarly, Guba and Lincon (1994, p. 111 cited in Scotland, 2012; Bryman and Bell, 2011, p. 15) report that the interpretivist researcher cannot obtain a valid knowledge through the indirect participation with individuals, or gathering the facts which provide the basis of laws 'Inductivism or theory-building approach'. Moreover, since it is impossible for humans to experience the world without subscribing in it, this world cannot be independent from the knowledge of human beings (Scotland, 2012). As pointed by Stahl (n.d) this paradigm heavily depends on two philosophical traditions. These traditions include the phenomenology and hermeneutics (Lee, 1991). The former term refers to the science of the

[91] Views reality to be subjective and differ from person to person

being of being[92]. On the other hand, the term hermeneutics focuses on providing a way for understanding texts. Thus since this paradigm focuses on texts, or language to understand the way through which people view the world, feel or interact with each other, the qualitative approach is the suitable method to collect data and obtain an acceptable knowledge (Flowers, 2009).

4.5 The Study Philosophy

Literature including Johanson and Clark (2006) cited that the main issue is not whether our research is philosophically informed. However, the issue is that how could we mirror our philosophical options or guard them in relation with other available options those can be employed.

The discussion of philosophical assumptions like ontology and epistemology revealed that when researchers focus on testing a theory instead of building a new one 'deductivism', the positivism approach must be followed to get a valid knowledge. On the other hand, the interpretivism paradigm must be used if we aim to build a new theory 'inductivism'. Moreover, since the current research primarily tries to answer questions and test hypotheses those are deduced from the theoretical consideration, the positivism paradigm is adopted to achieve aims and objectives. The positivist epistemology paradigm relies on the quantitative approach to get a valid knowledge. In addition, the positivism paradigm

[92] Is a part of ontology argues that human societies are composed of free people, social scientists who are interested in the actions of human beings who don't follow the laws of nature

states that in the case of collecting data externally[93], the objective ontology and positivist epistemology must be used to get an acceptable knowledge. Thus, since this research used secondary data those are indirectly obtained from the study population, the positivist paradigm is used to answer the questions of this research (Livesey, 2014). Furthermore, since the deductivism-positivism approach relies on the quantitative method to get a valid knowledge, the evidence of choosing the deductive approach as a strategy for this research, is discussed below.

4.6 The Study Strategy

The process of choosing a suitable approach is considered as a crucial step in order to conduct a well-structured investigation to the study's problem (Creswell, 2003 cited in Alekseev, 2010, p. 32). The previous discussion revealed that there are two major approaches to collect, organise, or evaluate data. The first method is known as the quantitative approach "deductive". This approach relates to all studies which are focusing on quantification and measurement to collect and analyse numeric data 'positivist epistemology-deductive'. On the other hand, the second approach is the qualitative approach and it focuses on employing words as a tool for collecting and analysing data 'interpretivism-inductive' (Bryman and Bell, 2011, p. 26-27).

Saglam and Milanova (2013, p. 3) pointed that the quantitative approach is an approach concentrating on identifying the relationships between a set of variables those can be pro-

[93] Without participating in the study sample

cessed statistically 'positivism'. By contrast, the qualitative approach depends on evaluating and understanding the underlying phenomenon in detail, via a direct participation 'subjectivism'. Thyer (2010, p. 27) state that though the quantitative approach is considered as an essential method to understand the practices of social work, it is difficult to neglect the importance of qualitative approach as it is deeply concentrating on understanding the behaviour of human beings and causes as well. Saunders, Lewis and Thornhill (2012, p. 162-163) added that the quantitative research is mainly related to the deductive approach 'theory-testing approach[94]'. While, the qualitative approach is a method concerned with the inductive research 'theory-building approach[95]'.

Although the above two approaches are complementary to each other, they still differ in the way of understanding or analysing the world phenomena. For instance, the qualitative approach focuses on concepts, definitions, characteristics, symbols, and things' descriptions. On the other hand, the quantitative method concerns with the process of calculations and charts' drawing (Tewksbury, 2009; Saunders, Lewis and Thornhill, 2012 p. 473). In this context, Bryman and Bell (2011, p. 347) state that one of the most prominent differences between these two approaches is that the researchers of the quantitative approach employ measurement procedures in order to obtain a valid knowledge 'objectively'. However, the qualitative researchers concentrate on interpreting words to obtain that knowledge 'interpretivism'.

[94] Through which the whole attention will be focused on the data those are employed to test theory 'deductivism' (Saunders, Lewis and Thornhill, 2012, p. 162-163).

[95] A naturalistic and emergent research's design aims to produce a theoretical perspective more comprehensive than that one which is available in the available literature 'interpretivism' (Saunders, Lewis and Thornhill, 2012, p. 162-163).

In the line with the above discussion, the current research depends on the available literature to deduce valid hypotheses those can be linked with equation concepts. These formulas are calculated by using numerical facts those are taken indirectly from the study's population. Thus, to achieve the main aim of this research the deductive approach is employed. Furthermore, Bryman and Bell (2011, p. 11) mentioned that when a study deduce hypotheses by concentrating on the available literature, these hypotheses must be subjected to the empirical analysis. Furtherance, a majority of the previous studies with the same nature, adopted the quantitative approach to achieve aims and objectives (e.g. Ali, 2016; Vodova, 2013; Malik and Rafique, 2013; Subedi and Neupane, 2013; Aikaeli, 2006; Amador, et al., 2011; Wong and Fung, 2002; Chordia, Sarkar and Subrahmanyam, 2010; Yamin and Ali, 2014). The following figure summarise the research philosophy and approach which are employed to achieve the study's aims and objectives:

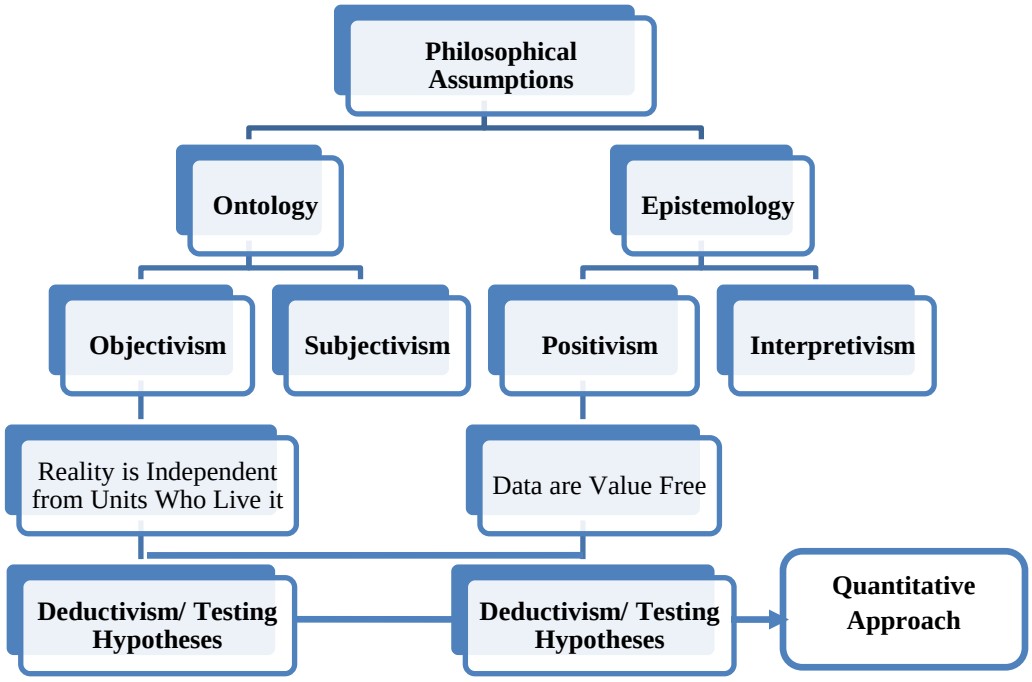

Figure 17: Research Philosophy Diagram[96]

The above figure shows that there are two main philosophical assumptions those can used to conduct business studies. Thus, philosophical assumptions such as ontology and epistemology revealed that when researchers focus on testing hypotheses instead of building a new theory, the deductive approach must be followed to get a valid knowledge. Since the current research primarily tries to answer questions and testing hypotheses those are deduced from the theoretical consideration, the positivism paradigm is adopted to achieve aims and objectives. The positivist epistemology paradigm relies on the quantitative approach to get a valid knowledge. In addition, the positivism paradigm states that in the case of collecting data externally "Value Free Data", the objectivist ontology and positivist epistemology must be used to get an acceptable knowledge. Thus, since this research used secondary data those are indirectly obtained from the study population, the positivist and objectivist paradigms are used to answer the questions and testing the hypotheses of this research (Livesey, 2014).

4.7 Data Description

4.7.1 Data Sample and Sources

Through relying on data's availability, the current research aims at assessing the impact of the fluctuations in the weighted average TDIR and the average ratios of the ASE's M/BV and P/E as well as the inflation in the decisions of Jordanian investors, over the period

[96] The researcher (2016)

Q1/2000-Q4/2014. The study also concerns of identifying the impacts of the 2007/8 financial crisis on investors' behaviour as measured by the liquidity of the Jordanian commercial banks and the ASE. For this purpose, the study primarily collects a time series data drawn from a population encompasses all the Jordanian listed banks and the Amman Stock Exchange. However, since the listed Jordanian Islamic banks do not meet the requirements of this research, two Islamic banks were scrolled out the sample of this research. Thereby, the study's sample consists of all listed commercial banks, which are reaching the number of thirteen local commercial banks as well as the Amman Stock Exchange. However, ratios like the M/BV and the P/E relate to all listed companies, which are reaching the number 233 public shareholding companies in 2014.

The data which is used to measure the liquidity of the Amman Stock Exchange and the average ratio of the ASE's M/BV and the P/E, are quarterly data obtained from the database of the Amman Stock Exchange. On the other hand, to measure banks' liquidity, the study compiled quarterly observations from the financial reports, which are published in the official sites of the ASE, Jordanian commercial banks and the statistical bulletins of the CBJ. In addition, the data of the time deposit interest rates are quarterly data obtained from the official site of the CBJ. The data which are relating to inflation are quarterly data obtained from the department of statistics (DOS). Moreover, the study employed sixty observations per variable, where the total observations of this research are 780. See table 4.1 in appendix D, p. 475, for the summary of data sources and the way of constructing the dummy variable, which is used to measure the relationship between the liquidity of banks along with the liquidity of the ASE.

4.7.2 The Study Period and Pattern

Since this research aims to find the impact of the 2007/8 financial crisis on investors' behaviour, the study period is divided into three main stages. The pre-crisis period extends from Q1/2000 to the fourth quarter of 2007, the crisis period Q1/2008-Q4/2011, and the post crisis period Q1/2012-Q4/2014. These stages are created by relying on the statistics of foreign grants, foreign direct investment (FDI) and the stock index. Specifically, the available literature states that the economy of Jordan was adversely affected by the recent financial crisis due to the decline in foreign grants and the inflow of foreign direct investment to Jordan (Ahid and Augustine, 2012, UNICEF, 2009). The available statistics showed that the amounts of FDI decreased from $2622 million in Q4/2007 to $1473 million by the end of 2011, and then increased to $1760 million by the end of 2014 (World Bank, 2015). The statistics showed that the total amount of foreign grants to Jordan decreased from $194 million in Q4/2007 to $169 million by the end of 2011. After that the total grants increased from $169 million to $ 602 million by the end of 2014 (CBJ, 2015). In addition, the statistics showed that the stock index of ASE decreased from 3675 points in Q4/2007 to 1995 points by the end of 2011. Then it increased to 2165 by the end of 2014 (ASE, 2015). Moreover, the following table (4.1) reports the statistics of the foreign grants, FDI and the stock index of the ASE over the period Q4/2007, Q4/2011, and the Q4/2014:

Table 4.1: The Study Pattern

The following table reports the statistics of the foreign grants, FDI and the stock index of the ASE over the period Q4/2007, Q4/2011, and the Q4/2014.

Indicator	Q4/2007	Q4/2011	Q4/2014
Foreign Grants	$194	$169	$602
Foreign Direct Investment	$2622	$1473	$1760
Stock Index	3675	1995	2165

Chapter Four: Conceptual Framework & Research's Philosophy

Section Three: Variables' Definition and Measurements

4.8 Introduction

The primary aim of this research is to determine the response of Jordanian investors towards the impacts of market fundamentals, and the 2007/8 financial crisis. In order to achieve the main aim of this research, the study included a set of quantitative-continuous independent and dependent variables. These variables are described as shown below:

First: Explanatory Variables

I. Market Fundamentals

According to this research, the term 'market fundamentals' is mainly related to the weighted average time deposit interest rates, market-to-book value ratio, price to earnings ratio and the inflation as captured by the consumer price index. The current study used the weighted average time deposit interest rates, which are calculated by the Central Bank of Jordan. These rates are computed through relying on the interest rates, which are provided by the Jordanian commercial banks by the end of each month. However, since the current research relied on quarterly data to achieve aim and objectives, the time deposit interest rates in this research relate to the three months weighted average time deposit interest. Additionally, the average ratios of the ASE's market-to-book value and the price to earnings are also used as independent variables in order to achieve the study's aim and objec-

tives. In this study the M/BV and the P/E ratios are calculated through relying on the market prices, shares' earnings as well as shares' values of the public shareholding companies, which are listed in the ASE. Furthermore, the current study is also used the consumer price index in order to capture the inflation. Moreover, the fundamental variables of this research are discussed below:

A. Time Deposit Interest Rate

This variable refers to the interest rates, which are paid by Jordanian commercial banks for customers' time deposits. However, to avoid the phenomenon of getting heteroscedasticity, the variable of the weighted average time deposit interest rates is employed to attain the prime aim of this research. In addition, to define the impact of the fluctuations in the TDIR in investors' decisions, this research used the standard deviation of the TDIR. According to the Central Bank of Jordan, all the licensed Jordanian commercial banks must declare the rates of the paid time deposit interest, the total amounts of the fixed deposits, as well as the way of calculating these rates by the end of each month. Thus, through relying on these rates the Central Bank of Jordan can calculate the weighted average time deposit interest rates.

However, in Jordan the time deposit interest rate is paid for different maturities. For example, the minimum period for opening a fixed deposit account is one month and the maximum is one year. On the maturity date, the account is automatically renewed for an identical period and at the interest rate prevailing thereupon. For more elaboration, in or-

der to open a one month fixed account, the balance must be higher than the minimum which is JOD 5000; otherwise, the rate of interest shall not be computed. However, to open this account for a period more than three months then the balance must be more than 10,000, but less than 50,000. When the balance of the fixed account is more than 100,000 then it is possible to open this account for one year, and it can be automatically renewed. Moreover, in order to open a fixed account, it is compulsory to provide a valid identification, a valid residency documents, proof of address and a leasing contract. After opening this account, if the client thinks to withdraw any or the full amount of the deposit before the maturity date, the rate of interest will calculated according to the following formula (CBJ, 2012):

$$IR = (deposit\ value * interest\ rate * maturity) - the\ withdrawn\ amount * the\ interest\ rate\ in\ withdrawal\ date\ plus\ 2\% * the\ remaining\ period\ to\ maturity$$

However, since the current research collects quarterly data to assess the impact of market fundamentals in the decisions of Jordanian investors, the study is concerned with the time deposit interest rates, which relate to the three month fixed accounts. These rates are calculated through relying on the interest rates, which are declared by the Jordanian commercial banks at the end of each month.

Moreover, this research postulates that the increase in the time deposit interest rate is positively affecting the liquidity of the Jordanian commercial banks. By contrast, the study assumed a negative correlation between the TDIR and the liquidity of the ASE. Precisely, the study suggests that the increase in interest rates encourages investors of Jordan to de-

posit their money into the banks, rather than investing them in the ASE. On the other hand, when these rates decline over time, investors find it worthwhile diverting their financial resources in the ASE instead. The review of literature showed that studies including Al-Ali and Kassem (2013) examined the effect of the volatility of the weighted deposit interest rate on the performance of banks, as measured by the volumes of time and saving deposit. Thang (2009); Aurangzeb (2012); Khan, Khan and Rukh (2012) report that the higher interest rates motivate investors to divert their funds from high risk investments such as stocks to invest them in fixed, or saving banks' accounts in the hope of getting higher returns, and vice versa. Al-Majali and Al-Assaf (2014); Al-Zu'bi (2000) explore a positive bio-directional association between the weighted average time deposit interest rates, and the performance of the ASE as captured by the stock index. The Central Bank of Jordan calculates the weighted average time deposit interest rate through applying the following equations:

First of all the CBJ calculates the weighted average time deposit interest rate for each bank individually, and then it divides the summation of all Jordanian commercial bank's $WATDIR^{JB}$ by the total number of Jordanian commercial licensed banks.

$$WATDIR^{JB} = \frac{\sum_{T}^{B}(FD * I)}{TFD}$$

The "FD" relates to the fixed deposits in the time "T", and here the t relates to the first, second and third month. The "I" relates to the interest rate, which is offered by each bank by the end of the first, second and the third month. The "B" relates to the Jordanian bank which we are calculating the weighted average interest rate for it, and the "TFD" refers to the total fixed deposit during the three months. After applying the above formula for all

Jordanian commercial banks individually, we apply the following formula that is applied by the Central Bank of Jordan in order to calculate the weighted average time deposit interest rate for the three month fixed accounts:

$$WATDIR = \frac{\sum WATDIR^{JB}}{13}$$

The $\sum WATDIR^{JB}$ relates to the summation of the weighted average time deposit interest rates of the Jordanian commercial banks, divided by the total number of the Jordanian commercial licensed banks, which are 13 Jordanian commercial banks.

B. Market-to-Book Value Ratio

The calculation of this ratio is mainly relied on two main values. These values are including the market value and it represents the price that owners in the free markets will be ready to pay for a security (Fabozzi and Pamela 2003, p.13), and the book value relates to a company's total assets minus intangible assets and liabilities. A share's book value can be calculated as shown below (ASE, 2015, Fabozzi (2008, p.663):

$$\text{Book value per share} = \frac{Book\ Value\ of\ Shareholders' Equity}{Number\ of\ Shares\ Outstanding}$$

Moreover, the ratio of market-to-book value can be calculated through dividing a share's market price by a share's book value. However, according to this research the ratio of M/BV refers to the average ratio of the ASE's market-to-book value. The Amman Stock Exchange calculates this ratio as shown below:

$$\text{The average ratio of ASE's M/BV} = \frac{ASE's\ market\ value}{ASE's\ book\ value}$$

The market value of the ASE refers to the average market price in a specified period of time, multiplied by the total number of companies' outstanding shares in the same period 'Market Capitalisation'. The book value of the ASE relates to the average book value in a specified period of time, multiplied by the total number of outstanding shares in the same period. According to this research this period is three months (ASE, 2015).

Moreover, by relying on the power of this ratio to determine whether a stock price is over or undervalued, the current research posits that this ratio is negatively affecting the liquidity of the ASE. By contrast, the study suggests a positive relationship between the liquidity of the Jordanian commercial banks along with the average ratio of the M/BV. In other words, this research assumes that the decrease in the M/BV ratio encourages investors of Jordan to allocate their financial resources in the ASE rather than investing them into the banks. On the other hand, when this ratio increases over time, investors find it worthwhile depositing their funds into the banks instead.

The review of literature has been confirmed that the ratio of the M/BV plays a pivotal role in helping investors to discover the fair prices of the traded securities. In this vein, Helfert (2001); Yamin and Ali, 2014; Finn (2006); Utama and Sentosa (1998) find it an effective tool for making investment decisions. This ratio helps investors to evaluate whether a firm's share price is trading over or under its intrinsic value. Shaban and Al-Zubi (2014) state that financial ratios like the M/BV are significantly impacting the decisions of the ASE's investors. However, Ali (2016) finds an insignificant correlation between the M/BV ratio and the liquidity of the Amman Stock Exchange.

C. Price to Earnings Ratio

This ratio refers to the average market prices of companies' shares in a specific period of time divided by the average amount of shares' earnings in the same period. According to this research this period is three months. However, to calculate this ratio usually the ASE relies on the closing prices at the end of each month.

$$\text{P/E} = \frac{AMP}{AE} * 100$$

The AMP is the average of the closing market prices at the end of each month, and the AE refers to the average of the shares' earnings in the same period. However, relying on the power of this ratio to determine whether a stock price is over or undervalued, the current research posits that this ratio is negatively affecting the liquidity of the ASE. By contrast, the study suggests a positive relationship between the liquidity of the Jordanian commercial banks along with the average ratio of the P/E. In other words, this research assumes that the decrease in the P/E ratio encourages investors of Jordan to allocate their financial resources in the ASE rather than depositing them into the banks. On the other hand, when this ratio increases over time, investors find it worthwhile depositing their funds into the banks instead.

The review of literature has been confirmed that the ratio of P/E plays a pivotal role in helping investors to discover the fair prices of the traded securities. In this vein, Yamin and Ali, 2014; Finn (2006) found it as an effective tool for making investment decisions. This ratio helps investors to evaluate whether a firm's share price is trading over or under

its intrinsic value. Shaban and Al-Zubi (2014) state that financial indicators like P/E ratio are significantly impacting the decisions of ASE's investors. Moreover, the current research aims at assessing the impacts of the fluctuations in the P/E ratio in the decisions of Jordanian investors, over the period Q1/2000-Q4/2014.

D. Inflation

Due to the significant correlation between the interest rates and the inflation, in this research the variable inflation is used as a control variable. However, to find the impact of inflation on the decisions of Jordanian investors, the consumer price index "CPI" is employed. Thus, since most people link inflation with the increase in the average level of prices, the consumer price index is considered as a common measure for inflation. This index is defined as a mechanism for gauging changes in the average prices of consumers' goods and services. Moreover, the consumer price index can be calculated by determining the typical consumer buys "market basket" (Schiller, 1980, p. 137). The department of statistics in Jordan calculates the consumer price index as shown in the following formula:

$$CPI = \frac{CPMBP}{BPMBP} * 100=$$

The CPI relates to the consumer price index and it is considered as a common measure for inflation. The CPMBP relates to the current period market basket price and the BPMBP refers to the base period market basket price (e.g. if the last quarter of 2000 is the current period, the third quarter of 2000 would be the base period of prices of a basket of consumer goods and services, such as food, medical care as well as transportation). Thus, the change in the CPI is used to evaluate price changes, which are associated with the cost of

living, and it is used to capture the inflation. In Jordan, the department of statistics calculates the CPI on a quarterly basis (DOS, 2017).

However, according to the existing macroeconomic theories the decrease in money supply normally leads to increase the levels of interest rates. The theories also mentioned that the decrease in money supply is supposed to be negatively linked with the levels of inflation. Thus, since the higher price level increases due to the shortage of money supply, which is negatively linked with the levels of nominal interest rates, the levels of inflation are suggested to be positively linked with the interest rates and that is also applied with the Keynesian theory, which assumes a causal positive correlation between the inflation and the nominal interest rate. The influence mechanism of the rates of interest on the levels of inflation can be elaborated in many ways. For example, we can simply apply the method of using the cost of capital. Since, the increase of interest rates lead to increase the user cost of capital that will result in increasing the cost of production. Consequently, this change will lead to increase the levels of inflation through shifting the aggregate supply curve to the left side (Asgharpur, Kohnehshahri & Karami, n.d).

However, the available literature showed different results regarding the relationship of the interest rates along with the inflation. For instance, a study by Mahdi and Masood (2011) revealed a weak long-run correlation between the weighted average interest rates and the rates of inflation. By contrast, Jaradat and AI-Hhosban (2014) showed a positive and bidirectional causality between the interest rates and the levels of inflation in Jordan, over the period 1990-2012. Moreover, due to the significant correlation between the levels of inter-

est rates and the inflation, the current research assumed that the decision of Jordanian investors, not only affected by the volatility of interest rates, but it is also affected by the change in inflation. Maybe this view holds true for the Jordanian investors, since there is a significant relationship between the inflation and the levels of interest rates (e.g. Jaradat and AI-Hhosban, 2014). Therefore, the current research used the inflation as a control variable in order to evaluate the impact of the fluctuations in market fundamentals in the decisions of Jordanian investors, as captured by the liquidity of banks and the ASE.

Furthermore, previous researchers including Vodova (2011a) found a non-significant correlation between the rate of inflation along with the liquidity of the Slovakian banks as measured by the liquid assets to total assets, total loan to total deposits and the liquid assets to total deposit ratio. Similarly, Alper and Anbar (2011) showed a non-significant relationship between the liquidity of banks as measured by the liquid assets to total assets ratio along with the rate of inflation. However, Jongwanich (2010) discovered a positive correlation between inflation rate and the private saving behaviours. By contrast, Aurangzed (2012) found that the rate of inflation is negatively impacting the performance of three south Asian stock markets. However, a study by Richard, Adekunie and Ojodu (2012) found that the rate of inflation is insignificantly related to the growth of Nigerian stock market. Moreover, to assess the impact of the inflation in the decisions of the Jordanian investors, the current research assumed that the fluctuations in the inflation is positively impacting the liquidity of the Jordanian commercial banks, while when the inflation decreases over time that will be positively influencing the liquidity of the Amman Stock Exchange.

II. Dummy Indicator

Is a numeric variable[97] that is employed to identify the relationship between the liquidity of the ASE along with the liquidity of the Jordanian commercial banks. This indicator is built through utilising two measures including the TLTD as a measure for banks' liquidity and the trading volume as an indicator to capture the liquidity of the ASE. However, the reason behind selecting these two measures is that after running a pre-correlation test, the strongest relationship is found to be between these two metrics. This dummy is used to represent both the liquidity of the ASE, and the liquidity of banks. For example, on the one hand, this dummy is used as a proxy to represent the liquidity of the Amman Stock Exchange in order to find the relationship between the market's liquidity along with the liquidity of banks as measured by the LATA, LATD, TLTD and the TDTA ratios. On the other hand, this dummy is used to represent the liquidity of the Jordanian commercial banks in order to identify the relationship between the liquidity of banks along with the liquidity of the ASE as measured by the TOR, NOT, VT, and the TV. Moreover, this dummy is used twice as shown below:

[97] This indicator is defined as a numeric variable. Thus, to ensure that I'm dealing with a numeric variable, I tabulated it and the results showed that the variable's data is defined and restored in the dataset as a numerical variable. Additionally, such as other variables, all the dataset is declared to be a time series data to be able to run series analysis tests like ADF, VAR and VECM. See tabulation's results in table 6.5 in appendix J, p. 579.

- **ASEL_DUM**

The dummy variable is used to identify the relationship of the Amman Stock Exchange's liquidity as captured by the dummy, along with the liquidity of the Jordanian commercial banks as measured by the LATA, LATD, TLTD and the TDTA ratios. This dummy takes the values (zero and one). The 0 value indicates a negative relationship between the ASEL_DUM and the liquidity of the Jordanian commercial banks. The 1 value means that there is a positive correlation between the ASEL_DUM along with the liquidity of banks.

$$DUM\_ASEL = 0 \xrightarrow{yields} JCBL \underset{-}{\leftrightarrow} ASEL$$

$$DUM\_ASEL = 1 \xrightarrow{yields} JCBL \underset{++}{\leftrightarrow} ASEL$$

- **JCBL_DUM**

The dummy variable in this research is used to identify the relationship between the liquidity of the Jordanian commercial banks as captured by the dummy along with the Amman Stock Exchange's liquidity as measured by the TOR, NOT, VT, and the TV. This dummy includes two values (zero and one). The zero value means that the JCBL_DUM is negatively correlated with the ASEL. On the other hand, the one value denotes a positive relationship between the JCBL_DUM along with the liquidity of the ASE.

$$DUM\_JCBL = 0 \xrightarrow{yields} ASEL \underset{-}{\leftrightarrow} JCBL$$

$$DUM\_JCBL = 1 \xrightarrow{yields} ASEL \underset{++}{\leftrightarrow} JCBL$$

Second: The Dependent Variable

- **Investors' Decisions**

This research defines the term 'investors' decisions' as the attitudes or the ways of how Jordanian investors respond towards the fluctuations in the TDIR, M/BV, P/E ratio and the CPI. The study posits that the decisions of Jordanian investors can be considered to be rational[98] through adopting one of the following investment avenues:

1- When the time deposit interest rates and the inflation go up, investors tend to allocate their financial resources into the banks. However, when these fundamental variables decline over time, investors find it worthwhile diverting their financial resources into investment in the stock market instead.

2- The second way can be achieved when investors invest their funds into the ASE when the ratios of the M/BV and the P/E go down, or exploiting their money into the banks if these ratios go up.

Moreover, this research assumes that there are two main investment opportunities in Jordan. These opportunities are including the investment in the ASE, and the commercial banks of Jordan. However, Bryman (2004, p. 66-67) states that if the variable cannot be measured directly, it should be indirectly measured through employing related indicators.

[98] According to the theory of traditional economic, investors are considered to be rational when their decisions aim to take the benefit of the available opportunities (TIAA CREF, n.d).

Therefore, to measure the variable investors' decisions, the current research used two main indicators. The first indicator represents the liquidity of Jordanian commercial banks, and the second relates to the liquidity of the ASE. These two indicators are explained below:

1. Amman Stock Exchange Liquidity

Kemboi and Tarus (2012) define the market liquidity as an indicator used to measure the ability of stock market's investors to buy, or liquidate financial securities easily and instantly. According to Richard, Adekunie and Ojodu (2012) the term 'market's liquidity' refers to the ability of investors to purchase and sell securities easily. This indicator is considered as a significant measure to capture the growth and development of financial markets. The review of literature showed that the liquidity of market plays a vital role in the process of capital allocation, which in turn will be positively linked with economic growth and development. For instance, recent studies like (Abdul-Khali, 2013; Wong and Zhou, 2011; Sbeiti, Bhuyan and Cader, 2013) find a positive relationship between the market's development and economic growth. Additionally, the review of literature has shown a significant association between the stock markets' liquidity and economic growth (e.g. Kim, 2013; Bennaceur and Ghazouani, 2003). However, the current research aims at understanding investors' behaviour towards the volatility in the TDIR, M/B ratio, P/E ratio and the inflation.

Since the variable investors' behaviour cannot be directly measured, the current study utilised the liquidity of the Amman Stock Exchange to capture the decisions of the Jordanian

investors. The available literature developed numerous indicators to measure the liquidity of stock markets. However, in this research the liquidity of the ASE is mainly captured by using the trading activity's measures. Thus, since the available literature showed that trading activity measures like the turnover ratio, trading volume, value traded, and the number of transaction can be used as effective tools to capture the liquidity of financial markets, the current research used these four measures for the same purpose (i.e. Ali, 2016; Sukruoglu and Nalin, 2014; Amador, et al., 2013; Levine and Zervos, 1998; Wyss, 2004; Alabed and Al-Khouri, 2008; Kemboi and Tarus, 2012; Chordia, Sarkar and Subrahmanyam, 2001).

According to Amador, et al. (2013) the indicator of trading activity is considered as an indirect measure to capture the market's liquidity and it refers to the trading volume. In this context, Andrew and Wang (2001) report that any practical analysis for the trading activity should start with a proper measure of the market's volume. The volume indicators are primarily used to portray the market breadth and depth (Sarr and Lybek, 2000). As mentioned by Chen and Phuong (2014), the depth of stock market is measured by the trading volume. Datar (2000), comments that the depth of financial markets generally refers to the frequency of trading or the volume of transactions. According to Chordia, Sarkar and Subrahmanyam (2001) investors' mood and feelings play a vital role in affecting the trading activity of the financial markets. Moreover, according to this research the liquidity of the ASE is gauged by using four measures, and they are described as shown below:

a. Turnover Ratio

This ratio is considered as a typical measure to gauge the liquidity of stock market. This ratio was used by Amador, et al. (2013) to investigate the impact of monetary policy on the stock markets' liquidity. Levine and Zervos (1998) used it to predict the role of stock market's liquidity to enhance economic growth. Sukruoglu and Nalin (2014) employed this ratio to capture the liquidity of European stock markets. In addition, this ratio was employed by (Kemboi and Tarus, 2012) to examine the relationship between stock market liquidity and the markets' development. Adenuga (2010) utilised it to measure the liquidity of Nigerian stock market. Ali (2016) used it to measure the liquidity of ASE. Thus, since the above studies appraised the ability of this ratio to measure the stock markets' liquidity, this ratio is used to capture the liquidity of Amman Stock Exchange. The ASE calculates this ratio as addressed below:

$$Turnover\ Ratio = \frac{Total\ No.of\ Specific\ period's\ Traded\ Stocks}{No.of\ Initial\ Offered\ Stocks\ in\ the\ Same\ Period}$$

The study assumes that this ratio is negatively impacted by the fluctuations in the TDIR, M/BV ratio, P/E ratio and the inflation.

b. Trading Volume

This ratio is considered as a popular standard to assess the liquidity of stock markets. The review of literature has shown that researchers including Wyss (2004); Alabed and Al-Khouri (2008) relied on this measure to gauge the stock market's liquidity. In the same

vein, the current research used this factor to measure the liquidity of the Amman Stock Exchange. The ASE defines this measure as the total number of shares which are traded during a specific period of time.

$$T.Volume = \sum TS_{\,t}$$

Where the TS, refers to the total number of traded shares in the Amman Stock Exchange in time t. The study assumes that this measure is negatively related to the fluctuations in the TDIR, M/BV ratio, P/E ratio and the inflation.

c. Value Traded

This ratio is deemed as a typical indicator to measure the stock market's liquidity. The available literature showed that studies like Ali (2016); Amador, et al. (2013); Alabed and Al-Khouri (2008); Kemboi and Tarus (2012) used this factor to measure the stock markets' liquidity. Similarly, the current research employs this measure to capture the liquidity of the Amman Stock Exchange. The ASE calculates this value by applying the following formula:

$$T.Value = \sum TS_t * \mu MP_t$$

Where, TS refers to the total number of shares which are traded in the Amman Stock Exchange in the time t, multiplied by the average market price in the same period. The study assumes that this measure is negatively related to the fluctuations in the TDIR, M/BV ratio, P/E ratio and the inflation.

d. Number of Transactions

This measure refers to the total number of securities' contracts, which are bought or sold during a given period of time. The current study assumes that the TDIR, M/BV ratio, P/E ratio and the inflation are negatively affecting the number of transactions in the Amman Stock Exchange. For the same purpose, this ratio was previously used by Wyss (2004) to measure the liquidity of stock markets. The ASE calculates this measure as shown below:

$$No.of\ Transaction = \sum NC_t$$

Where the NC refers to the number of the executed bought or sold contracts in the time t. The current research assumes that this measure is negatively related to the fluctuations in the TDIR, M/BV ratio, P/E ratio and the inflation.

I. Banks' Liquidity

The BIS (2008) defined the term 'banks' liquidity' as a "bank's ability to fund increases in assets and meet obligations as they come due, without incurring unacceptable losses". Malik and Rafique (2013) define bank's liquidity as the ability of banks to finance their operations efficiently. However, this research focused on calculating the average liquidity of the 13 listed Jordanian commercial banks in order to capture the decisions of Jordanian investors. Thus, to measure investors' decisions, the following ratios are used in order to capture the liquidity of the Jordanian commercial banks:

a. Total Deposit/ Total Assets

This ratio refers to the ability of banks to acquire new debt in order to obtain cash assets at reasonable costs. The higher the ratio of customer deposit is the better liquidity's indicator, and vice versa (Liquidity Management, n.d). According to Uyen (2011) this ratio is considered as one of the most common ratios to measure the liquidity of banks. This ratio is calculated by the Central Bank of Jordan as follows:

$$TDTA = \frac{\mu CTD}{\mu BTA}$$

The μ.CTD refers to the average amount of customers' total deposits minus the interbank deposits. The μ. BTA refers to the average of banks' total assets. The study assumes that this ratio is positively impacted by the volatility in the TDIR, M/BV ratio, P/E ratio and the inflation.

b. Loans/ Deposits Ratio

The available literature considers this ratio as a general and valid measure to assess the liquidity of banks (IMF, 2000; Uyen, 2011; MacDonald and Koch, 2006; Yamin and Al-Dahrawi, 2015; Ongore and Kusa, 2013). This ratio represents the percentage of a bank's loan portfolio that is funded by customers' deposits excluding the interbank deposits. Therefore, the lower the ratio is the better liquidity indicator, while the higher the ratio means that banks have low levels of liquidity to respond to financial shocks (IMF, 2000). The Federal Reserve Bank of New York (n.d) reports that this ratio is used to evaluate

banks' ability to meet deposits' withdrawals and to judge on banks' desires to meet loans' demand[99]. The CBJ calculates this ratio as addressed below:

$$TLTD = \frac{\mu TL}{\mu CTD}$$

Where:

The μ. TL refers to the average total loans 'credit facilities' that are provided by Jordanian commercial banks. The μ. CTD refers to the average value of customers' total deposits. The study assumes that this ratio is negatively impacted by the volatility in the TDIR, M/BV ratio, P/E ratio and the inflation.

c. Liquid Assets to Total Assets

This ratio is considered as a typical and valid measure to capture the liquidity of banks (IMF, 2000). This ratio was previously used by many researchers for the same purpose (e.g. Alper and Anbar, 2011; Vodova, 2013; Malik and Rafique, 2013). Thus, since the available literature finds this ratio as an effective measure to capture banks' liquidity, this ratio is used by this study to capture the liquidity of Jordanian commercial banks. This ratio is calculated by the Central Bank of Jordan as shown below:

$$LATA = \frac{\mu BLA}{\mu BTA}$$

Where, the μ. BLA refers to the average value of Jordanian commercial banks' liquid assets divided by the average amount of banks' total assets. This ratio is calculated by using liquid assets like cash and balances with banks and financial institutions maturing within

[99] This can be achieved by reducing cash assets and investments in financial securities

three months, deposits with banks and financial institutions, short term direct credit facilities at amortized cost, financial derivatives-positive fair value and short term investments, and other financial assets at amortized cost. The study assumes that this ratio is positively impacted by the volatility in the TDIR, M/BV ratio, P/E ratio and the inflation.

d. Liquid Assets to Total Deposits

This ratio is recommended as a valid measure to assess banks' liquidity. Previous studies like Vodova (2011a) used this ratio to capture banks' liquidity. In addition, Malede (2014) used this ratio as a proxy for banks' liquidity. This ratio is calculated as follows:

$$LATD = \frac{\mu BLA}{\mu BTD}$$

Where:

The μ .BLA refers to the average amount of Jordanian commercial banks' liquid assets. The μ. BTD relates to the average amount of banks' total deposits. The study assumes that this ratio is positively impacted by the volatility in the TDIR, M/BV ratio, P/E ratio and the inflation. For the variables' list of this research, see table 4.2 in appendix D, p. 478.

Chapter Four: Conceptual Framework & Research's Philosophy

Section Four: Methods of Collecting and Analysing Data

4.9 Data Collection Technique

The concept 'data collection' relates to the method of gathering the required information for each item in the survey (Statistic Canada, 2010). The term 'survey' is defined as the activity of compiling data from a specific population in an organised, and methodical manner for the aim of assessing a population's features, testing hypotheses or building a database for measurement purposes (Robson, 1993; Statistic Canada, 2010).

According to Yin (2003, p. 85) data can be collected through six sources. These sources include interviews, direct observations, participant observations, documentations, physical art facts as well as archival records. However, since the current study depends on secondary data[100] that is available on the official sites of the study's sample, the technique of secondary analysis is employed instead of administering a questionnaire or conducting interviews. Moreover, since the research's design depends on the positivist epistemology and objectivist ontology approaches, the required data are gathered indirectly 'non-participant observation'. To support the chosen technique of this research, studies with the same nature used the secondary data's technique to achieve aims and objectives (e.g. Ali, 2016; Al-Ali and Kassem, 2013; Mehrabanpoor, Bahador and Jandaghi, 2011;Saatcioglu and Starks, 1998; Al-Jafari and Tliti, 2013; Ali and Afzal, 2012; Yamin and Ali, 2014; Yamin and Al-Dahrawi, 2015).

[100]The term "secondary data" refers to the data which have been gathered for some other purposes "readily available for secondary analysis through the internet" (Thyer, 2010, p. 164).

4.10 Analysis's Techniques

This research aims to investigate the impact of market fundamentals in the decisions of Jordanian investors, including the impacts of the 2007/8 financial crisis. For this purpose, the collected data are analysed through using the STATA software. More specifically, the study employed the following techniques in order to evaluate the impact of market fundamentals and the 2007/8 financial crisis in the decisions of Jordanian investors:

1. Descriptive Analysis

The current research employs the descriptive analysis's technique to describe the data's mean, median, variance, standard deviation, skewness and kurtosis. According to Argyrous (2011, p. 20) due to the feature of summarising a large amount of data into few number or some pictures, such as diagrams and tables, this technique is considered as one of the most important statistical techniques to facilitate the process of reading research' materials.

2. Correlation Test

The current study employs the technique of bivariate analysis "Pearson correlation test" to measure the strength of associations between the variables of interest. A Pearson correlation test is a statistical technique aims to identify the degree of association between interval/ratios 'quantitative' variables (Kinnear and Gray, 2004, p. 298; Bryman and Bell,

2011, p. 347). The review of previous studies has shown that many researchers employ this technique to find the correlations between numeric variables (e.g. Irungu, 2013; Fares and Khamis, 2011; Yamin and Ali, 2014).

3. Two-way ANOVA Test

This study employs the Two Way Anova test to examine the differences between the variables' means. This technique is featured by its ability to evaluate the impacts of each factor individually or jointly on the response variable 'interaction effect[101]'. According to Argyrous (2011) if the value of significance 'par-value' is less than (1% or 5%), the null hypothesis must be rejected and vice versa. Moreover, the current research used this technique to compare the impacts of the TDIR, M/BV ratio, P/E ratio and the inflation on investors' behaviour before, during and after the 2007/8 financial crisis.

4. Multiple Linear Regression

This technique is used to investigate the impact of market fundamentals in the decisions of Jordanian investors. This method concentrates on illustrating the movement in the respondent factor due to the variation in two or more independent variables (Coolidge, 2013, p. 199). Argyrous (2011, p. 258) defines the multiple regression test as a statistical technique that is designed to investigate the relationship between one response variable and several explanatory variables. The review of literature has revealed that studies with

[101]The interaction impact occurs when the impact of a single independent variable on a single DV depends on the level of a second independent variable (Pallant 2005, p. 229).

the same nature used the same technique to achieve aims and objectives (e.g. Samuel, Yahaya and Isaac, 2013; Khrawish, Siam and Jaradat, 2010; Irungu, 2013; Yamin and Al-Dahrawi, 2015; Fares and Khamis, 2011; Richard, Adekunie and Ojodu, 2012; Yamin and Ali, 2014). Moreover, the current research proposed the following models to achieve aims and objectives:

- $\boldsymbol{Ln\ (BL)} = \beta_0 \pm \beta_1(\sigma TDIR\ \%) \pm \beta_2\left(\sigma \frac{M}{BV}\%\right) \pm \beta_3(\sigma\ P/E) \pm \beta_4(\sigma CPI) \pm \beta_5\ ASEL\_DUM + \varepsilon_t \ \ldots\ldots\ldots\ldots\ldots (1)$

Where:

The dependent variable 'BL' represents banks' liquidity as measured by the TDTA, TLTD, LATA and the LATD ratios. The β_1:β_5 refer to the regression coefficients. The TDIR refers to the weighted average time deposit interest rates, the M/BV relates to the average ratio of the ASE's market-to-book value, the P/E relates to the average ratio of the ASE's earnings to price ratio and the CPI relates to the consumer price index that is used to measure the impact of inflation in the liquidity of the Jordanian commercial banks. The σ symbol relates to the standard deviation, which is employed in order to measure the fluctuations in the TDIR, M/BV ratio, P/E ratio and the CPI in banks' liquidity. The ASEL is a dummy variable represents the liquidity of the ASE. The epsilon symbol refers to the error term.

- $\boldsymbol{Ln\ (SL)} = \beta_0 \pm \beta_1(\sigma\ TDIR\ \%) \pm \beta_2(\sigma \frac{M}{BV}\%) \pm \beta_3(\sigma\ P/E) \pm \beta_4(\sigma CPI) \pm \beta_5\ JCBL\_DUM + \varepsilon_t \ \ldots\ldots\ldots\ldots\ldots (2)$

The 'SL' variable refers to the liquidity of the ASE that is measured by using the turnover ratio, trading volume, value traded and the number of transactions. The JCBL is a dummy variable represents the liquidity of the Jordanian commercial banks. However, since em-

pirical techniques like the regression models are considered to be highly sensitive to the observations, which do not follow the pattern of other observations. That maybe will negatively affect the validity of the regression's results, through increasing the standard errors and the P-Values (Idre, 2017). To avoid that, the current research study applied the methods of the robust regression, in order to check the standard errors' values of the used regression models.

5. Multicollinearity Test

Is a statistical technique mainly used to identify the relationship between two or more explanatory variables (Pallant, 2005, p. 142). According to Kinnear and Gray (2004, p. 341), when the rate of correlation "r" among the independent variables is 0.9 or more that means there is a phenomenon of Multi-collinearity[102]. Argyrous (2011, p. 272) argues that when the rate of correlation is more than 0.8, the Multi-collinearity will be too high, while, if it is less than 0.8, then the correlation will be low[103]. The literature review has shown that studies including (Elnader and Alraimony, 2012; Khrawish, Siam and Jaradat, 2010; Hsing, 2011; Fares and Khamis, 2011), used the same technique to check the status of autocorrelation among the independent variables. Therefore, the current research employs this technique to examine whether there is a case of autocorrelation between the independent variables or not? However, since a majority of financial series variables are sug-

[102] This case of collinearity is undesirable
[103] This case of collinearity is acceptable and the results of regression will not be affected by the existed Multi-collinearity

gested to have unit root, the study run the ADF to avoid the problem of getting spurious regression consequences.

6. Augmented-Dickey Fuller Test

The fact is that the majority of macroeconomic and financial variables 'time series variables' such as interest rate, GDP, inflation rate or stock prices are vulnerable to increase and decrease over time. For instance, a country's output increases due to the technology improvement. Stock prices increase as central banks estimate a positive inflation rate, and so on. However, though some variables might not fluctuate over time, the fact is that the effects of innovations cannot be disappeared with time. Thus, to determine whether the impact of these movements is temporary or permanent, it is necessary to check for data stationarity (Nielson, 2005). According to Mahadeva and Robinson (2004) testing regression for variables that might have unit-roots 'time series variables', usually leads to spurious regression results. Therefore, to avoid that it is necessary to check variables' stationarity (Nielsen, 2005).

Indeed, there are many tests for checking data's stability. These tests included the Augmented Dickey Fuller's test (ADF) linked to Dickey and Fuller (1979). Phillips-Perron test as referred to Phillips and Perron (1988). The KPSS test as linked to Kwiatkowski, Phillips, Schmidt and Shin (Kwiatkowski, et al., 1992). According to Mahadeva and Robinson (2004); Argyrous (2011, p. 274) when studies depend on time series data, they would be exposure to the problem of getting serial correlation. Dickey and Fuller succeed in tack-

ling this common phenomenon through developing the test of Dickey-Fuller "with zero lag" to Augmented Dickey-Fuller test "with extra lags". This new form of Dickey-Fuller test, not only has a very low power against the null hypothesis, but this power also decreases significantly when we add deterministic terms to the regression test (Zakrajsek, 2009). Additionally, Mahadeva and Robinson (2004) reported that the remark of the low power restricts the ability of rejecting the null hypothesis.

According to ADF test, the null hypothesis (H_0) refers to the hypothesis that contains unit root 'not stationary'. By contrast, the alternative hypothesis (H_A) assumes that the data does not contain unit root "stationary" (Nielsen, 2005). The hypotheses of ADF's test can be viewed as shown below[104]:

The Null Hypothesis: H_0: $\delta = 0 \xrightarrow{yields}$ Variables are not stationary

The Alternative Hypothesis: H_A: $\delta < 0 \xrightarrow{yields}$ Variables are stationary

The ADF test focuses on rejecting the null hypothesis to accept the alternative one. The test assumes that the null hypothesis must be rejected if the T-statistic is more than the critical value (5%). On the other hand, the H_0 must be accepted if the value of T-statistic is less than the critical value (Rinat and Kumar, 2013; Mahadeva and Robinson, 2004).

In a nutshell, due to the role of ADF's test to avoid the problem of getting spurious regression results, the review of literature has shown that this technique was used by many researchers to examine the stationarity of time series data (e.g. Talla, 2013; Ali, 2016; Elnader and Alraimony, 2012; Hsing, 2011; Akpan, et al., 2012; Richard, Adekunie and Ojodu, 2012; Al-Jafari and Tiliti, 2013). Moreover, to shun the problem of getting spuri-

[104]Mahadeva and Robinson (2004)

ous regression results, the current research used the ADF in order to examine whether the study's data has a unit root or not. The estimated ADF model is addressed below:

7. Johansen Co-integration Test

This test is relied on the maximum likelihood estimation that is proposed by Johansen (1988). The test was proposed to determine the number of existed co-integration vectors for the variables of interest. The main purpose of using this technique is to find out whether or not there is a long-run equilibrium relationship between the variables. However, before running the Johansen test, this research used the Schwarz information criterion (SIC)[105], to determine the optimal number of lags which must be included in the test. Thereafter, the study assumed that there is no co-integration vectors in the models (R= 0). However, the results revealed that at least there exists one co-integration vector in some models. Consequently, both the maximum Eigen value (λ-Max) and the trace value (λ-Trace) have succeeded in replacing the null hypothesis by the alternative one (R≥1). Thus, since these values for some variables are found to be significant at the level 1%, the VECM has been applied. By contrast, other results from Johansen test showed that both the Max and the Trace values are less than their critical values, therefore, some models have been examined through running the VAR model. Sayedhossain (2016) states that if the results from the Johansen test show that the variables are not co-integrated then the unrestricted VAR model must be applied. Otherwise, we must go for the restricted Vector Error Correction Model "VECM". These models are discussed below:

[105] This technique is featured by taking the parsimoniousness of the model into consideration (Adenuga, 2010).

I. Vector Autoregressive Model "VAR"

According to Sims (1980) the popularity of Autoregressive model came from advocating it as an "alternative to simultaneous equation model". In this regard, Sims (1980) cited that this technique can be used in economic analysis to characterise the joint dynamic behaviour of many factors, without the need of having strong restrictions of the kind needed to define the underlying structural parameters. Therefore, it became a prevalent method of time-series analysis. Moreover, to find the short correlation between the TDIR, M/BV ratio, E/P ratio, the inflation and the dummy along with investors' decisions, the VAR model is applied. According to the Central Bank of Nigeria (2011), when we are dealing with co-integrated non-stationary time series variables, the vector error correction model must be applied. By contrast, if the variables of interest are non-stationary and not co-integrated, then the VAR model should be applied to gain information regarding the short-run correlations. In other words, when the differenced variables are not co-integrated, the VAR model must be employed, otherwise VECM will be used in order to examine if there is an equilibrium relationship on the long run or not.

II. Vector Error Correction Model 'VECM'

Through identifying the importance of stochastic trends and developing the co-integration analysis, econometricians like (Granger 1981; Johansen, 1995) play a vital role in enhancing the process of analysing the relations between time series variables. This enhancement was achieved through using models like the VECM to separate the short-run from the

long-run relations. For instance, since the properties of stochastic trends are similar to the properties of discrete random walk, those trends cannot be eliminated without using differencing. Thus, after removing these trends through differencing[106] the variable d times and finding that the variables are co-integrated of d orders, the VECM must be used to find whether the variables are co-integrated on the long-run or not. According to Al-Jafari (2013) if the variables found to be integrated, then the VECM equation must be used. The main aim of this model is to define the speed of adjustment from the short-run to the long-run equilibrium. Furthermore, Lutkepohl (2001) mentioned that the short-run relations portray the adjustment of the long-run dynamics when the disturbances have occurred. Therefore, it is preferable to separate the short-run relations from the long-run dynamics of the generation process of a set of variables. However, since the VECM model represents the co-integration relations on the long-run those cannot be explained by VAR model, the single equations of VECM are developed in order to accomplish the study aims and objectives.

III. Granger Causality

Hendry (2010) mentioned that Clive Granger has made an essential contribution to the empirical econometric. For instance, in his first research he focused on finding the causal relationships between economic factors. Thus, the granger causality technique plays a vi-

[106] The differencing operator is defined as Δ (for example $\Delta y_t = y_t - y_{t-1}$). That means the y variable is integrated of order one, I (1) (Lutkepohl, 2001).

tal role in econometric, as it provides macroeconomic with practical tests of economic theories "*which imply time-related causal relationships between economic variables*".

According to Granger the term 'Granger Causality' is a statistical technique used to find the direction of possible causality between pairs of variables. This test is focused on finding out whether the past values of X are significant to predict the dependent variable (Y_t). Thus, if that is true, then the X variable will be the responsible of causing the Y variable. In this case the X is said to Granger cause Y (i.e.X $\rightarrow$ Y) (Fsk. Sk, 2016)[107].

4.11 Econometric Models

The current research employs a multiple regression analysis techniques in order to investigate the impact of the fluctuations in market fundamentals like the TDIR, M/BV ratio, P/E ratio and the inflation on the decisions of Jordanian investors. For this purpose, the study proposed the following models:

- $\boldsymbol{Ln\,(BL)} = \beta_0 \pm \beta_1(\sigma TDIR\,\%) \pm \beta_2\left(\sigma \frac{M}{BV}\%\right) \pm \beta_3(\sigma\, P/E) \pm \beta_4(\sigma CPI) \pm \beta_5\, ASEL\_DUM + \varepsilon_t \ldots\ldots\ldots\ldots\ldots (1)$

Where:

The dependent variable 'BL' represents banks' liquidity as measured by TDTA, TLTD, LATA and LATD. The β_1:β_5 refer to the regression coefficients. The TDIR refers to the weighted average time deposit interest rates and the M/BV relates to the average ratio of

[107] http://www.fhi.sk/files/katedry/kove/predmety/Prognosticke_modely/VAR-and-VECM.pdf

the ASE's market-to-book value. The P/E relates to the average ratio of the ASE's earnings to price ratio and the CPI relates to the consumer price index that is used to measure the impact of the inflation in the liquidity of the Jordanian commercial banks. The σ symbol relates to the standard deviation, which is employed in order to measure the fluctuations in the TDIR, M/BV ratio, P/E ratio and the CPI in banks' liquidity. The ASEL is a dummy variable represents the liquidity of the ASE. The epsilon symbol refers to the error term.

- $\boldsymbol{Ln\,(SL)} = \beta_0 \pm \beta_1(\sigma\, TDIR\,\%) \pm \beta_2(\sigma \frac{\mathrm{M}}{BV}\%) \pm \beta_3(\sigma\, P/E) \pm \beta_4(\sigma CPI) \pm \beta_5\, JCBL\_DUM + \varepsilon_t \ \ldots\ldots\ldots\ldots\ldots (2)$

The 'SL' variable refers to the liquidity of ASE that is measured by using the turnover ratio, trading volume, value traded and the number of transactions. The JCBL is a dummy variable represents the liquidity of the Jordanian commercial banks. However, according to Mahadeva and Robinson (2004) testing regression for variables that might have unit-roots 'time series variables', usually leads to spurious regression results. Thus, to avoid the problem of getting spurious regression results, the following model is employed in order to check variables' stationarity:

$$\Delta Y_t = \delta_0 + \delta_{1t} + \delta_2 Y_{t-1} + \sum_{i=1}^{p} \alpha\, \Delta Y_{t-i} + \varepsilon_t \ \ldots\ldots\ldots\ldots\ldots (3)$$

Where, the Y_t is the variable to be tested for the unit root, Δ is the difference operator, ε_t is a pure white noise error term. The δ_0, δ_1, δ_2 and α are the parameters to be estimated. t is the time trend and p is the number of lags. After running the ADF test, the results showed that the variables became stationary after adding the first difference. Therefore, the previ-

ous regression models "1 & 2" have been adjusted by entering the first difference in order to avoid the issue of getting spurious regression results. Thereby, the following regression models are estimated instead of the previous two models '1 & 2':

- $\textbf{Ln}\ (\Delta.\textbf{BL}) = \beta_0 \pm \beta_1(\Delta.\sigma\text{TDIR}\ \%) \pm \beta_2\left(\Delta.\sigma\frac{\text{M}}{\text{BV}}\%\right) \pm \beta_3(\Delta.\sigma\ P/E) \pm \beta_4(\Delta.\sigma CPI) \pm \beta_5\ \Delta.\text{ASEL\_DUM} + \varepsilon_t \ \ldots\ldots\ldots\ldots\ldots (4)$

Where, the dependent variable Δ.BL represents the first difference of banks' liquidity in the logarithm form. This indicator is captured by using ratios like the TDTA, TLTD, LATA and the LATD ratio. The β_1: β_5 refers to the regression coefficients. The TDIR refers to the first difference of the weighted average time deposit interest rates and the M/BV relates to the first difference of the average ratio of the ASE's market-to-book value. The P/E relates to the first difference of the average ratio of the ASE's earnings to price ratio and the CPI relates to the first difference of consumer price index that is used to measure the impact of inflation in the liquidity of the Jordanian commercial banks. The ASEL is a dummy variable represents the liquidity of the ASE. The epsilon symbol refers to the error term and the (t) is the time trend.

- $\textbf{Ln}\ (\Delta.\textbf{SL}) = \beta_0 \pm \beta_1(\Delta.\sigma\text{TDIR}\ \%) \pm \beta_2\left(\Delta.\sigma\frac{\text{M}}{\text{BV}}\%\right) \pm \beta_3(\Delta.\sigma\ P/E) \pm \beta_4(\Delta.\sigma CPI) \pm \beta_5\ \Delta.\text{JCBL\_DUM} + \varepsilon_t \ \ldots\ldots\ldots\ldots\ldots (5)$

Where, the SL refers to the first difference of the stock market liquidity as measured by using the turnover ratio, number of transaction, value traded and the trading volume. The dummy variable represents the liquidity of the Jordanian commercial banks. However,

Gujarati (1995, p. 725) states that measuring the issue of non-stationarity by this method, may leads to lose any long-run correlation that might be existed between the variables. To avoid that the study applied the Johansen co-integration test to check if there are long-run correlations between the variables. By relying on the Johansen's results, the study applied the single equations of both the VAR and the VECM techniques.

However, Gujarati, (1995, p. 725) indicates that solving the issue of non-stationarity in this method is like *"throwing out the baby with the bath of water"*. The reason behind that is that running the regression test through taking the first difference may lead to losing a valuable long-run correlation that is given when the variables are tested at levels. In addition, most economic theories are stated as long-run association between variables in levels form, instead of the first difference form[108]. Moreover, to avoid the problem of losing any valuable long-term correlation, the study moved forward to apply additional tests like the Johansen co-integration test including the VAR and the VECM tests. These tests are applied after each regression test in order to check the nature of correlation between the variables of interest, and to be sure that the results have not lost any long-run correlation that is may be existed between the variables. To run these tests, the following models are developed:

- $\boldsymbol{TRACE^{JO}}$

$$LR = (r_0, n) = -T \sum_{k=0}^{n} \text{Ln}\,(1 - \lambda_i) \ldots\ldots. (6)$$

[108] Economists like, Milton Friedman's tested the permanent income hypothesis through assuming that "the level of permanent consumption is a function of the level of permanent income". This hypothesis is stated in terms of levels instead of the first difference for the variables (Gujarati, 1995, p. 725).

- MAX^{JO}

$$LR = (r_0, r_0 + 1) = -TLn(1 - \lambda_{r0+1}) \ldots\ldots (7)$$

Since the variables of this research are found to be non-stationary, the study employed the Johansen test in order to check whether or not the study's variables are integrated on the long-run. Thus, if the results of Johansen test showed that both the Trace and the Max values are more than the critical value, the VECM must be applied; otherwise we should run the VAR test. Moreover, the single equations of the VAR and VECM are used in order to examine the nature of relationships between the TDIR, M/BV, P/E, inflation and the dummy along with the liquidity of banks and the ASE. According to Sayedhossain (2016) when a research looks for evaluating the impact of a set of independent variables on one dependent variable, the single equation of the VAR or the VECM should be used in order to identify the relationship between the examined variables. Thus, by relying on the regression models, the following models are developed:

First: VAR Models

I. Bank Liquidity as a proxy for Investors' Decisions

❖ $\boldsymbol{Ln\,(BL_t)} =$

$$\alpha \pm \sum \beta_{ik}\,(BL_{t-1}) \pm \sum \beta_{ik}\,(\sigma\, TDIR\%_{t-i}) \pm \sum \beta_{ik}\left(\sigma \frac{\mathrm{M}}{BV}\%_{t-i}\right) \pm \sum \beta_{ik}\left(\sigma \frac{P}{E}_{t-i}\right) \pm \sum \beta_{ik}\,(\sigma\, CPI_{t-i}) \pm \sum \beta_{ik}\, ASEL\_DUM_{t-i} + \varepsilon_t \quad \ldots\ldots\ldots\ldots\ldots (8)$$

Where, the BL is the variable's vector and it relates to the banks' liquidity. However, since, more than one variable are used to capture the liquidity of banks, each variable that is found to be not integrated, it will be measured in a separate VAR model. α is vector of intercept term (k*1). The β_I are the metrics of parameters to be estimated in the model (K*K). K_i is the lag length (i.e. i=1……..k).ε is the white noise error term.

II. Amman Stock Exchange Liquidity as a proxy for Investors' Decisions

❖ $\boldsymbol{Ln\,(SL_t)} =$

$$\alpha \pm \sum \beta_{ik}\,(SL_{t-i}) \pm \sum \beta_{ik}\,(\sigma\, TDIR\%_{t-i}) \pm \sum \beta_{ik}\left(\sigma \frac{\mathrm{M}}{BV}\%_{t-i}\right) \pm \sum \beta_{ik}\left(\sigma \frac{P}{E}_{t-i}\right) \pm \sum \beta_{ik}\,(\sigma\, CPI_{t-i}) \pm \sum \beta_{ik}\, JCBL\_DUM_{t-i} + \varepsilon_t \quad \ldots\ldots\ldots\ldots\ldots (9)$$

Where, the SL is a (K*1) vector of variable. This variable relates to the stock markets. However, since more than one variable is used to measure the market's liquidity, each variable is found to be not co-integrated, it will be measured in a separate VAR model. α is

the vector of intercept's terms (K*1), β_i are the metrics of coefficients to be estimated in the model (K*K). The k_i refers to the lag length (i.e. i= 1…..k). ε_t is the white noise error term for the time t.

Second: VECM Models

III. Bank Liquidity as a proxy for Investors' Decisions

$$\Delta \boldsymbol{Ln\ BL_{it}} = \alpha_i + \sum_{i=1}^{k} \beta_{ik}\, \Delta BL_{t-i} + \sum_{i=1}^{k} \beta_{ik}\, \Delta TDIR\%_{i,t-i} + \sum_{i=1}^{k} \beta_{ik}\, \Delta \frac{\mathrm{M}}{BV}\%_{i,t-i} + \sum_{i=1}^{k} \beta_{ik}\, \Delta \frac{P}{E}_{i,t-i} + \sum_{i=1}^{k} \beta_{ik}\, \Delta CPI_{i,t-i} + \sum_{i=1}^{k} \beta_{ik}\, \Delta ASEL\_DUM_{i,t-i} + \psi_i \varepsilon_{t-1} + \mu_t \dots\dots\dots\dots\dots\dots (10)$$

Where, ΔBL is the first-difference operator ($\Delta BL_t = BL_t - BL_{t-1}$). This variable is the dependent variable and it relates to the liquidity of banks. To measure the liquidity of banks, four variables are used, namely, TDTA, TLTD, LATA and the LATD ratio. Thus, since, more than one variable is used to represent the liquidity of banks; each of these variables will be separately measured in a separate VECM, if it is found to be integrated with the variables on the right side. The α and β_I are the metrics of parameters to be estimated in the model (K*K).

IV. Amman Stock Exchange Liquidity as a proxy for Investors' Decisions

$$\Delta \boldsymbol{Ln\ SL_{it}} = \alpha_i + \sum_{i=1}^{k} \beta_{ik}\, \Delta SL_{t-i} + \sum_{i=1}^{k} \beta_{ik}\, \Delta TDIR\%_{i,t-i} + \sum_{i=1}^{k} \beta_{ik}\, \Delta \frac{\mathrm{M}}{BV}\%_{i,t-i} + \sum_{i=1}^{k} \beta_{ik}\, \Delta \frac{P}{E}_{i,t-i} + \sum_{i=1}^{k} \beta_{ik}\, \Delta CPI_{i,t-i} + \sum_{i=1}^{k} \beta_{ik}\, \Delta JCBL\_DUM_{i,t-i} + \psi_i \varepsilon_{t-1} + \mu_t \dots\dots\dots\dots\dots\dots (11)$$

This equation is used to test the causation that is running from the TDIR, M/BV ratio, P/E ratio, the CPI and JCBL_DUM to the SL. Where, the ΔSL is the first-difference operator ($\Delta SL_t = SL_t - SL_{t-1}$) and it relates to the liquidity of the Amman Stock Exchange, over the period Q1/2000-Q4/2014. However, since, more than one variable is used to measure the market's liquidity; each integrated variable will be measured in a separate VECM equation, while the variables which are on the right side will be the same. The α and the β are the metrics of parameters to be estimated (K*K). The $K_{i,}$ is the lag length (e.g. i= 1….K). The optimal lag number is defined by the SIC. The t is the time trend, $\psi$is the short-run coefficient of the error correction term, ε_{t-1} is the first lagged period of the error correction term (s) that is derived from the long-run co-integration test[109]. μ_t is the white noise error term with usual properties. The error correction term tells us the speed of adjustment.

[109] When the ε_{t-1} is negative and significant that indicates to a long-run convergence of the model to equilibrium, and also illustrates "the proportion as well as the time it takes for the disequilibrium to be corrected during each period, in order to return the distributed system to equilibrium". In other words, the negative sign indicating a move back towards equilibrium, while the positive sign telling us that the model is moving away from equilibrium (Adenuga, 2010).

According to Masih and Masih (1997) the coefficient of the short-run adjustment represents the ratio by which the long-term disequilibrium in the dependent factor is being adjusted in each short period.

4.12 Quantitative Critique

The previous debate showed that this research primarily adopts the quantitative approach to achieve aims and objectives. However, the proponents of the anti-quantitative approach proposed a set of criticisms towards the approach itself. Their criticisms are that researchers of this approach concentrate on interpreting what is surrounding them, without differentiating social entities from the world of nature. However, this does not exist between the objects of social sciences. In addition, when researchers employ instruments and procedures to attain a valid knowledge that will lead to eliminate the relationship between the researchers, and what they are trying to investigate. The final point reports that in the case of identifying the relationship between variables statistically, the social entities will view the social life in a statistic manner. This means that the social life will be independent from people life (Bryman and Bell, 2011, p. 11). In line with the above discussion, the main question arising here is that how can we ensure the reliability and the validity of this research? In an attempt to answer this question, the issues of reliability and validity are discussed below:

4.13 Reliability

Research' reliability is a common measurement used to evaluate the quality of business and management studies. This measurement, concerns with the question of whether a study's results are repeatable or not (Bryman and Bell, 2011, p. 41). Thus, since the current research employs facts 'numerical data' those are published on the official sites of the study sample, this research is expected to be reliable. In other words, to achieve the aim of this research I employed a value free data[110]. Thereby, when other researchers use the same data under the same circumstances, the findings are estimated to be similar to the results of this research. According to Saunders, Lewis and Thornhill (2012, p. 323) the best method to ensure reliability and validity, is checking the sources of the used secondary data. For instance, when the study's data comes from authorities and organisations with a good reputation, the degree of reliability is supposed to be high. Likewise, since the data of this research is mainly compiled from well-known authorities and organisations, such as the Amman Stock Exchange, the Jordanian commercial banks and the Central Bank of Jordan, the component of reliability in this study is expected to be high.

4.14 Validity

This measure is used to assess whether the study's techniques are able to process the study's data or accomplishing aims and objectives (Bryman and Bell, 2011, p. 41-42). Twycross and Shields (2004) define it as an indication explains whether or not the study's techniques are efficient to measure what they are supposed to do. According to Saunders,

[110]Healy and Perry (2000) "*the data and its analysis do not change because they are being observed*".

Lewis and Thornhill (2012, p. 323) one of the most common ways to attain valid results is checking how previous researchers coped with secondary data similar to yours. Thus, since the previous related studies used similar measures to capture the liquidity of banks and the stock markets, the measures of this research are considered to be valid (e.g. Ali, 2016; Vodova, 2011, 2013; Alper and Anbar, 2011; Amador, et al., 2013, Wyss, 2004; Alabed and Al-Khouri, 2008).

4.15 The Study's Limitations

This research is concerned with assessing the impact of the fluctuations in market fundamentals like the TDIR, M/BV ratio, P/E ratio and the inflation in investors' decisions including the impacts of the 2007/8 financial crisis. However, since it is normal for researchers to face some barriers while conducting their studies; likewise, this study encountered a number of barriers. For instance, the main point is that this research excluded two of the most popular banks in Jordan. More specifically, this study scrolled out the study's sample the Islamic International Arab bank and the Islamic Bank of Jordan. The reason behind this exclusion relates to their nature and regulations as they do not include the factor of interest rate in their banking operations. Thus, since these banks do not meet the main requirements of this research, the function of rolling them out was inevitable. In addition, since the foreign banks in Jordan are not listed in the Amman Stock Exchange, as well as do not publish their financial reports, it was necessary to exclude them from the study's sample as well.

One more boundary is data availability and consistency. The used data restricted the investigation period to extend from Q1/2000-Q4/2014. This period is opposed to span from the first quarter of 1995 to the last quarter of 2014. The reason behind thinking to extend the study's period is that if more data is employed, the study expects to get a clearer image regarding the role of market fundamentals to enhance the decisions of Jordanian investors. Although I have limited observations which are 60 without any missing item, however, the study was able to accept some hypotheses and explain the role of the TDIR, M/BV ratio, P/E ratio and the inflation in the process of decision making. Thus, since the provided models succeeded in achieving the study aims and objectives, other researchers can rely on the provided framework and models to continue with new and larger data set. Another limitation is that the lack in literature regarding the impact of the TDIR, M/BV ratio, P/E ratio and the inflation in investors' decisions as measured by the liquidity of banks and the stock markets. Furthermore, the available literature showed a gap regarding the impacts of the 2007/8 financial crisis in investors' behaviour as captured by the liquidity of banks and stock markets.

4.16 Chapter Summary

This chapter compares the existed framework along with the proposed framework, which is developed in order to assess the impact of the TDIR, M/BV ratio, P/E ratio and the inflation in the decisions of Jordanian investors. Thus, through discussing the available framework, the current chapter was able to determine the gap in literature regarding the

impact of the TDIR, M/BV ratio, P/E ratio and the inflation in investors' decision. For the purpose of filling the gaps of the available framework, the current research aims at assessing the impact of the time deposit interest rates, M/BV ratio, P/E ratio and the inflation in the liquidity of the Jordanian commercial banks and the ASE. According to this research, the liquidity of banks was captured by using the LATA, LATD, TLTD and the TDTA ratios. On the other hand, the stock market liquidity was typically measured by utilising the TOR, VT, TV and the NOT. The study also seeks to explain the impacts of the 2007/8 financial crisis on investors' behaviour. Thus, by achieving this purpose, the study is expected to help investors to make rational investment decisions as well as developing the current framework, which is focusing on investors decisions and saving behaviours.

However, after identifying the gap in literature, the current chapter formulated four main hypotheses, which are tested through following the deductive approach. This method was selected after identifying the study's aim and objectives. However, for a good understanding of the main reasons behind choosing this approach, the chapter discussed the philosophical paradigms of the ontological and epistemological assumptions, as well as the study's strategy. However, the third section of this chapter focuses on describing the study's data and the definitions of variables, which are used to achieve the study's the aims and objectives. Thereafter, the chapter moved on to explain the method of collecting and analysing the study's data, which cover a passage of time extends from the Q1 of 2000 to the Q4 of 2014. After that I explained the set of econometric models, which are built to examine the study's data and hypotheses. Eventually, the chapter ended up by elaborating the main barriers, which have faced this research. However, to explain the re-

sults of the statistical techniques, which are used in this research; the coming chapter is constructed in order to examine the study's data and hypotheses.

Chapter Five: The Overall Findings and Results' Summary

5.1 Introduction

After discussing the philosophical paradigms of the ontological and epistemological assumptions, the previous chapter explains the strategy of this research, the study's data and the definitions of the examined variables. Thereafter, the chapter moved on to explain the method of collecting and analysing the study's data, which cover a passage of time extending from the Q1/2000 to the end of 2014. After that I explained the set of the econometric models, which are built to test the study's data and hypotheses. Eventually, the chapter ended up by elaborating the main barriers which this research faced. However, to assess the impact of market fundamentals in the process of decision making, the current chapter aims at testing the hypotheses, which are formulated to answer the impacts of market fundamentals and the 2007/8 financial crisis in the decisions of Jordanian investors. In this research, the decisions of Jordanian investors are measured by using the liquidity of the Jordanian commercial banks and the Amman Stock Exchange.

The current chapter is mainly aiming at summarising the data of this research and then it is moved on to check whether the study's data are stationarity or non-stationarity. After that, the chapter carried on to evaluate the impact of market fundamentals in the decisions of Jordanian investors. Thereafter, the study applied the two-way Anova test to explain the impacts of the 2007/8 financial crisis in the behaviour of Jordanian investors as measured by the liquidity of banks and the ASE. However, though the last period revealed that the economy of Jordan has been witnessing considerable movements, pre, during and post-

financial crisis and variables like the TDIR, M/BV, P/E and the inflation lie in the middle of these fluctuations, there is no study answered the impact of the TDIR, M/BV ratio, P/E ratio and the inflation in the perception of the Jordanian investors. For instance, during the period 2000-2006, the ratio of the ASE's M/BV increased from 1.12 to 2.91, and then declined to 1.45 and 1.315 at the end of 2012 and 2014, respectively. Likewise, the time deposit interest rates, fell down from 6.55% to 2.88% during the period 2000-2002, then increased to 6.49% in 2006, and ultimately declined to 4.11 by the end of 2014. Additionally, fundamentals variables like the P/E ratio increased from 14.82 in 2000 to 16.74 in 2006, before declined to 15.57 and 15.30 by the end of 2012 and 2014, respectively. Furthermore, the inflation as captured by the CPI increased from 67.10 in 2000 to 69.55 in 2002, and then increased to 80.20 by the end of 2006, and ultimately increased to 117.42 by the end of 2014.

However, though the change in market fundamentals like the TDIR, M/BV ratio, P/E ratio and the inflation might adversely affected investors' perception as well as the performance of the banking and financial sectors, the critical appraisal of the previous related studies revealed that there is no study answered the impact of these fundamental variables in the decisions of Jordanian investors. The existing literature also shows a gap regarding the effects of the 2007/8 crisis in the liquidity of the Jordanian commercial banks and the Amman Stock Exchange as main proxies for investors' behaviour (e.g. Ali, 2016; Wong and Fung, 2002; Chordia, Roll and Subrahmanyam, 2001; Amador, et al., 2013; Kemboi and Tarus, 2012; Bogdan, Bareša and Ivanovic, 2012; Kim, 2013; Aikaeli, 2006; Ojeaga and Odejimi, 2014; Al-Ali and Kassem, 2013; Abdul-Khaliq, 2013; Yamin and Ali, 2014). In line with the above discussion, it seems to be imperative to assess the impacts of

the fluctuations in the time deposit interest rates, market-to-book value ratio, price to earnings ratio and the inflation in the decisions of Jordanian investors, over the period Q1/2000-Q4/14. The study also looks for explaining investors' behaviour towards the impacts of the global financial crisis. Thus, through attaining the main aim of this research, the study is expected to develop the growing body of the existing literature that is focused on investor decisions and investment behaviour. In addition, the study will also provide researchers, academicians, investors and decision makers with important information regarding the fundamental relationship of market fundamentals along with the liquidity of banks, and the financial market of Jordan. Furthermore, through comparing investors' behaviour before, during and after the latest financial crisis, the study will construct a framework to help investors, financial advisors and decision makers to rationalise their decisions, during both the stable and the unstable financial periods. However, the following table (5.1) shows a road map of the main purpose of using the set of the empirical techniques, which are used to achieve the study's aims and objectives:

Table 5.1: The Main Used Empirical Techniques

The following table illustrates the main purpose of using the set of the empirical techniques, which are used to achieve the study's aims and objectives.

Empirical techniques	**The purpose of the used test**	**Page**
Descriptive Analysis	To test the data's means, variances, standard deviation, skweness and kurtosis	249

ADF Test	To check for stationarity	254
Multiple Regression	To test the first main and sub-Hypotheses. The first main hypothesis suggests that the fluctuations in market fundamentals are significantly affecting the decisions of Jordanian investors.	259
Robustness Tests	It is a post-estimation test used to check the reasons for getting high standard error's values.	495
Johansen Test	To test the second main and sub-hypotheses. The second hypothesis postulates a long-run integration between the fluctuations in market fundamentals along with the decisions of Jordanian investors.	263
VAR and VECM, Granger Causality and Wald Tests.	To test the third main and sub-hypothesis. The third hypothesis assumes that there is a long and short-run causality running from the fluctuations in market fundamentals towards the decisions of Jordanian investors.	264
Multicollinearity Test (VIF)	To test the status of autocorrelation between the independent variables.	491
Two-way Anova Test	This test was used in order to test the fourth hypothesis. This hypothesis assumed that	314

	there are no statistical differences, before, during, or after the financial crisis, between the decisions of Jordanian investors, due to the fluctuations in market fundamentals.	
Shapir-Wilk Test	To check if the residuals are normally distributed or not? (this test is applied after the regression tests)	492
Breusch Pagan Test	To check whether the data are hetroscedasticity or homoscedasticity.	493
Jarque-Bera Tests	To check if the residuals are normally distributed (VAR and VECM Post-estimation Tests)	499
Lagrange-Multiplier	To test the status of autocorrelation at lags among the variables (VAR and VECM Post-estimation Tests)	500

The above table shows the set of the empirical techniques, which are used to test the study's hypotheses. More specifically, to investigate the impact of market fundamentals like the TDIR, M/BV and P/E ratios and the inflation in the decisions of Jordanian investors, the current research formulated four main hypotheses. The first hypothesis postulates that the fluctuations in market fundamentals are significantly affecting the decisions of Jordanian investors. The second hypothesis suggests a long-run integration between the fluctuations in market fundamentals along with the decisions of Jordanian investors. The third hypothesis postulated a long and short-run causality running from the fluctuations in market fundamentals towards the decisions of Jordanian investors. The fourth hypothesis

suggests that pre, during or post the crisis period, there are no significant differences between investors' decisions due to the effects of the fluctuations in the TDIR, M/BV ratio, P/E ratio and the inflation. These hypotheses are tested by implementing the STATA software. More specifically, the above table elaborates that through using the STATA software the study applied the descriptive analysis to describe data's means, variances, standard deviations, kurtosis and skewness. The Augmented Dickey Fuller test is also used to check data's stationarty. The multiple regression analysis technique is used to investigate the impact of the TDIR, M/BV ratio, P/E ratio and the inflation in the liquidity of banks and the ASE. Techniques including the Johansen cointegration, VAR, VECM and Wald tests are also used to check if there are long or short-run correlations between the dependent and independent variables. However, to identify the relationship of banks' liquidity along with the liquidity of the ASE, the study constructed a dummy variable. This variable was built through utilising two measures including the TV and the TLTD ratio. The reason behind selecting these two measures relates to the strong correlation, which is found between these two metrics. This relationship was statistically discovered through running the Pearson correlation test as a pre-analysing test. See the correlation matrix, which is used to build the dummy variable in table 5.1 in appendix E, p. 482.

Furthermore, to examine the impacts of the 2007/8 financial crisis in investors' behaviours, the study's period was split into three stages. These stages include the pre-crisis period, the crisis period and the post crisis period. Thereafter, the study used the two-way ANOVA for variance analysis test in order to compare investors' behaviour, before, during and after the 2007/8 financial crisis. Thus, since the current research uses numerous techniques to achieve aims and objectives, the empirical tests of this research are consid-

ered to be crucial and important to explain the role of the TDIR, M/BV ratio, P/E ratio and the inflation in the decisions of Jordanian investors. In other words, compared with the previous related studies, the current research employs more empirical techniques to investigate the impact of market fundamentals in the decisions of Jordanian investors (e.g. Ali, 2016; Yamin and Ali, 2014; El-Seoud, 2014; Al-Ali and Kassem, 2013; Zeitun and Ben-Jelloun, 2013). Moreover, the findings of the used empirical techniques are discussed below:

5.2 Results of Summary Statistics

This section describes the descriptive statistics for the variables which are used to measure the impact of market fundamentals in the decisions of Jordanian investors. In this research, investors' decisions are captured by using the liquidity of the Jordanian commercial banks and the Amman Stock Exchange. Thus, through applying this test, the study described the data means, variances, minimum, maximum, standard deviation. In addition, to determine whether or not the time series data are normally distributed, the study displays additional statistics including the Skewness and Kurtosis statistics. Consequently, the summary statistics for the M/BV ratio, TDIR, P/E ratio, CPI, TDTA, TLTD, LATA, LATD, Turnover ratio, No. of transaction, trading volume, value traded and the dummy are explained as shown in the following table (6.1). However, before running the test all the data was plotted in order to identify whether they are normally distributed or not. See histograms 1-13 in appendix E, p. 484-485.

Table 5.2.1: Variables' Description

The following table demonstrates the descriptions of the variables, which are employed in order to measure the effect of the fluctuations in the TDIR, M/BV, P/E ratio and the CPI in the decisions of Jordanian investors.

Variable	Description
M/BV Ratio	An independent variable referring to the average market-to-book value ratio of all companies, which are listed in the Amman Stock Exchange.
TDIR	An independent variable which refers to the weighted average time deposit interest rates those are paid by Jordanian commercial banks on time deposits.
P/E Ratio	An independent variable referring to the average market price to earnings ratio of all the companies, which are listed in the Amman Stock Exchange.
Inflation Rate	Used as a control variable and it refers to the consumer price index in Jordan.
TDTA	A dependent variable utilised to measure the liquidity of Jordanian commercial banks. The CBJ calculates this ratio by dividing the average of customers' total deposits by total assets.
TLTD	A dependent variable utilised to measure the liquidity of Jordanian

	commercial banks and it is calculated by dividing banks' total loans by the average of customers' total deposits.
LATA	A dependent variable utilised to measure the liquidity of Jordanian commercial banks and it is calculated by dividing banks' liquid assets by total assets.
LATD	A dependent variable utilised to measure the liquidity of Jordanian commercial banks and it's calculated by dividing banks' liquid assets by banks' total deposits.
Turnover Ratio	A dependent variable used to measure the liquidity of ASE. The ASE calculates this ratio through dividing the No. of traded stocks by the number of initial offered stocks.
Trading Volume	A dependent variable used to measure the liquidity of ASE, and it relates to the total No. of shares which are traded during a specific period of time.
Value Traded	A dependent variable used to gauge the liquidity of ASE and it relates to the total value of the traded shares.
No. of Transaction	A dependent variable used to measure the liquidity of ASE and it relates to the total No. of executed bought or sold contracts during a given period of time.
JCBL_DUM/ ASEL_DUM	An independent dummy variable within two terms stands for the liquidity of Jordanian banks and stock market. This dummy used to examine

whether the relationship of banks liquidity with the liquidity of ASE is positive or negative.

Table 5.2.2: Summary Statistics

The following table reports the summary statistics for the examined variables, over the period Q1/2000-Q4/2014.

Variable	# of Obs	Mean	Std. Dev.	Vari-ance	Min	Max	Skew ness	Kurto-sis
M/BV	60	1.90	0.66	0.44	1.12	3.20	0.68	1.91
P/E Ratio	60	20.78	7.34	53.91	12.96	44.20	1.32	4.28
TDIR	60	4.40	1.20	1.45	2.460	7.25	0.24	2.38
CPI	60	87.27	16.67	278.11	67.10	117.42	0.34	1.65
TDTA	60	0.45	0.09	0.00	0.18	0.65	-0.39	3.01
TLTD	60	0.59	0.17	0.03	0.38	1.22	1.55	5.59
LATA	60	0.45	0.09	0.00	0.18	0.65	-0.39	3.01
LATD	60	0.64	0.10	0.01	0.23	0.90	-0.99	6.40
Turnover Ratio	60	59.60	31.14	969.81	11.25	102.17	-0.02	1.42

Trading Volume	60	2.91	2.09	4.36	2.28	6.99	0.29	1.85
Value Traded	60	6.47	6.07	3.68	3.35	2.03	0.72	2.02
No. Trans-actions	60	165	119	1.43	133	378	0.47	1.79
JCBL_DUM/ASEL_ DUM	60	0.75	0.43	0.19	0	1	-1.15	2.33

Throughout the study period, the first seven columns report the name of the examined variables, number of observation, means, standard deviations, and variances, the minimum and the maximum values of the Amman Stock Exchange's liquidity and the liquidity of Jordanian commercial banks as well as the market fundamentals. The quarterly means for the examined variables are 1.90, 20.78 4.40, 87.27, 0.45, 0.59, 0.45, 0.64, 59.60, 2.91, 6.47, 1652, and 0.75, respectively. The above table demonstrates that the examined variables exhibit significant variation in terms of magnitude. Specifically, the table illustrates that except for MBV, TDTA, LATA, LATD, TLTD, and the dummy, the standard deviations of other variables are found to be very high. In addition, column number eight confirms that the distribution of MBV, value traded, is moderately skewed to the right. However, variables including the LATD are negatively skewed to the left "heavier left tail". However, variables like TLTD and the P/E ratio are highly skewed to the right, while; the dummy variable is highly skewed to the left. The table also shows that the distribution of

the TDTA, CPI, TOR, TDIR, LATA, Trading volume and the NOT are approximately symmetric.

On the other hand, the kurtosis results signify that since the data of turnover ratio, M/BV ratio, TDIR, CPI, VT, TV, NOT and the dummy are less than three, the data seem to have flatness and they are lighter-than-normal tails. However, column number nine illustrates that the kurtosis values of the P/E ratio, TDTA, TLTD, LATA, and LATD variables are more than three; therefore, they are sharply peaked and have heavier-than-normal tails. Briefly, the table demonstrates that variables including the LATA and the TDTA ratios are normally distributed and approximately symmetric. Furthermore, the P/E ratio and the TLTD ratio are significantly skewed to the right with a kurtosis value more than 3. By contrast, variables such as LATD are highly skewed to the left with a kurtosis value 6.40. However, after running this test; all the variables have been transformed into the logarithm form to ensure that the data are homoscedasticity. However, after running the Breusch-Pagan test, the results proved that the data are homoscedasticity. See results from the Breusch test in table 5.1.3, in appendix F, p. 493.

5.3 The Results of the Unit Root Tests

When we are dealing with time series data, it is essential to examine whether the time series variables have unit roots or not. For instance, if the study variables are not stationary that will lead us to a high R^2, although the real relationship between the examined variables is not really existed. In this regard, Mahadeva and Robinson (2004) mentioned that testing regression for time series variables usually leads to spurious regression results.

Thus, to avoid the phenomenon of getting dubious regression results, and making sure that I'm dealing with a stationary time series data, the ADF test is performed. Specifically, the test is carried to check stationarity[111] for the TDIR, M/BV ratio, P/E ratio, CPI, TLTD, LATA, LATD, TDTA, turnover ratio, trading volume, value traded and the number of transactions series as well as the dummy variable. The general model of the ADF test is addressed below:

$$\Delta Y_t = \delta_0 + \delta_{1t} + \delta_2 Y_{t-1} + \sum_{i=1}^{p} \alpha \, \Delta Y_{t-i} + \varepsilon_t \quad \ldots\ldots\ldots\ldots\ldots (3)$$

Where, the Y_t is the variable to be tested for the unit root, Δ is the difference operator; ε_t is a pure white noise error term. The δ_0, δ_1, δ_2 and α are the parameters to be estimated. t is the time trend and p is the number of lags. The main hypotheses for this test are presented below:

I. $H_0: \delta = 0 \rightarrow$ Variables are not stationary.

II. $H_1: \delta < 0 \rightarrow$ Variables are stationary.

Through STATA software, the study used the Schwarz Information Criterion (SIC) in order to determine the number of lags. However, since the STATA software does not select the appropriate lag automatically, I manually put the number of lags that were previously defined by the SIC criterion. Anyway, before running the test, I plot the variables to check whether they have a trend or not. Consequently, the results showed that the variables contain trends, nevertheless, after converting them into the first difference the series became stationary. See graphs 1-26 in appendix E, p. 486-490.

According to Gujarati (1995, p. 720) if the computed T value in its absolute term is smaller than 1%, 5%, 10% critical values as computed by Mackinnon, we do not reject the null

[111] Stationarity means that the series means and variances are constant and the auto-covariance is time invariant.

hypothesis. In other words, this means that the time series variables are not stationary 'contain a unit root'. By contrast, if the absolute computed value of T-statistic is more than the absolute Mackinnon values, the null hypothesis must be replaced by the alternative one. This means that the time series variables do not have unit root 'variables are stationary'. According to the ADF test if the P-value is less than the level of significance (5%), the null hypothesis must be rejected, otherwise it must be accepted. The variables tested are TDIR, M/BV, P/E, CPI, TLTD, LATA, LATD, TDTA, Turnover Ratio, Trading-Volume, value traded, No. of Trans, and the dummy. After running the ADF test at level, as shown in the following table (5.3.1) the results indicate that all the variables failed to reject the null hypothesis which means that the study's time series variables are not stationary. However, after adding the first difference, all the variables succeeded in replacing the null hypothesis by the alternative one. In other words, the study's time series variables are found to be not stationary when they tested at level. However, after adding the first difference all the variables became stationary as shown in table 5.3.2.

Table 5.3.1: Augmented Dickey Fuller's Results

The following table demonstrates the results of the time series variables, which are tested at level in order to check if they are stationary or they need to be differenced in order to eliminate the existed unit root.

Variable	No. of lags	Level 5%	T-statistic	P-Value	H_0
MBV	2	-3.493	-2.710	0.232	Accepted

TDIR	2	-3.493	-2.720	0.228	Accepted
CPI	3	-3.494	-2.991	0.134	Accepted
P/E Ratio	3	-3.494	-2.810	0.193	Accepted
TLTD	3	-3.494	-2.871	0.172	Accepted
LATA	2	-3.493	-2.233	0.471	Accepted
LATD	2	-3.493	-2.583	0.213	Accepted
TDTA	2	-3.493	-2.233	0.471	Accepted
TOR	3	-3.494	-2.211	0.483	Accepted
TV	2	-3.493	-0.878	0.958	Accepted
VT	3	-3.494	-1.290	0.890	Accepted
NOT	2	-3.493	-2.197	0.493	Accepted
ASEL_DUM or JCBL_DUM	1	-3.492	-2.877	0.169	Accepted

Note: *** indicates that the time series variables are significant at 5 per cent level of significance.

Table 5.3.2: Augmented Dickey Fuller's Results after Adding the First Difference

The following table demonstrates the time series variables which became stationary after adding the first difference.

Variable	Level 5%	P-Value	1st Diff	Remark	H_0
MBV Ratio	-3.494	0.020	1	I (I)	Rejected
TDIR	-3.494	0.010	1	I (I)	Rejected
CPI	-3.495	0.003	1	I (I)	Rejected
P/E Ratio	-3.495	0.005	1	I (I)	Rejected
TLTD	-3.495	0.000	1	I (I)	Rejected
LATA	-3.494	0.000	1	I (I)	Rejected
LATD	-3.493	0.000	1	I (I)	Rejected
TDTA	-3.494	0.000	1	I (I)	Rejected
TOR	-3.495	0.000	1	I (I)	Rejected
TV	-3.494	0.0098	1	I (I)	Rejected
VT	-3.495	0.006	1	I (I)	Rejected
NOT	-3.493	0.0054	1	I (I)	Rejected
ASEL_DUM/ JCBL_DUM	-3.493	0.000	1	I (I)	Rejected

Note: *** indicates that the time series variables are significant at 5 per cent level of significance.

5.4 ADF Results' Summary

The current research employs time series variables in order to evaluate the impacts of the fluctuations in market fundamentals in the decisions of Jordanian investors. Thus, to avoid

the issue of getting spurious regression' results, I applied the ADF test in order to check the stationarity for the MBV ratio, TDIR, CPI, P/E ratio, TLTD, LATA, LATD, TDTA, TOR, TV, VT, NOT, and the dummy variable. Consequently, after running the ADF test at level, the results indicated that all the variables are not stationary. However, after adding the first difference, all the variables became stationary and integrated of the same order I (1).

5.5 Results from the Multiple Regression and the Johansen Tests

The current research aims at investigating the impact of the fluctuations in market fundamentals in the decisions of Jordanian investors as measured by the liquidity of banks and the ASE. For this purpose the following two models are formulated:

- ✓ $\mathbf{Ln\ (BL)} = \beta_0 \pm \beta_1(\sigma\ \text{TDIR}\ \%) \pm \beta_2\left(\sigma\frac{\text{M}}{\text{BV}}\%\right) \pm \beta_3\left(\sigma\frac{\text{P}}{E}\right) \pm \beta_4(\sigma\ \text{CPI}) \pm \beta_5\ \text{ASEL\_DUM} + \varepsilon_t \ \ldots\ldots\ldots\ldots\ldots (1)$
- ✓ $\mathbf{Ln\ (SL)} = \beta_0 \pm \beta_1(\sigma\ \text{TDIR}\ \%) \pm \beta_2\left(\sigma\frac{\text{M}}{\text{BV}}\%\right) \pm \beta_3\left(\sigma\frac{\text{P}}{E}\right) \pm \beta_4(\sigma\ \text{CPI}) \pm \beta_5\ \text{JCBL\_DUM} + \varepsilon_t \ \ldots\ldots\ldots\ldots\ldots (2)$

However, before running these models, the study applied the ADF test in order to check for stationarity. The findings showed that all the variables are not stationary at levels, while after converting them into the first difference they became stationary. Thus, due to the existence of unit root, it was necessary to adjust the study models in order to avoid the problem of getting spurious regression's results. Thus, based on the results of the ADF test, the above models have been adjusted as addressed below:

- ✓ $\Delta\,\mathbf{Ln}\,(\mathbf{BL}) = \beta_0 \pm \beta_1(\Delta.\sigma\text{TDIR }\%) \pm \beta_2\left(\Delta.\sigma\frac{\text{M}}{\text{BV}}\%\right) \pm \beta_3\left(\Delta.\sigma\frac{\text{P}}{E}\right) \pm \beta_4(\Delta.\sigma\text{ CPI}) \pm \beta_5\ \Delta.\text{ASEL\_DUM} + \varepsilon_t$ ……(4)

- ✓ $\Delta\,\boldsymbol{Ln}\,(\boldsymbol{SL}) = \beta_0 \pm \beta_1(\Delta.\sigma\,TDIR\,\%) \pm \beta_2\left(\Delta.\sigma\frac{\text{M}}{BV}\%\right) \pm \beta_3\left(\Delta.\sigma\frac{\text{P}}{E}\right) \pm \beta_4(\Delta.\sigma\text{ CPI}) \pm \beta_5\,\Delta.JCBL\_DUM + \varepsilon_t$ ……(5)

Where the Ln refers to the logarithm, the Δ as usual relates to the difference operators. The σ symbol indicates to the standard deviation that is used to measure the impact of the fluctuations in the TDIR, M/BV, P/E and the CPI in investors' decisions. Though, the models have been adjusted, however, authors including (Gujarati, 1995, p. 725) mentioned that solving the issue of non-stationarity in this method "*may be like throwing out the baby with the bath water*". Thus, running the regression tests through taking the first difference of the non-stationarity series may leads to lose a valuable long run correlation between the variables that is given by the levels between the variables. In addition, most economic theory is stated as long-run associations between variables in levels form instead of using the first difference form. Moreover, to avoid the problem of losing any valuable correlation, techniques like Johansen co-integration, VECM, VAR, and granger causality were applied after each regression test.

5.6 The Effect of Market Fundamentals in the Liquidity of Banks

The current research applied the multiple linear regression tests and the Johansen co-integration test in order to assess the impact of the fluctuations in market fundamental like

the TDIR, M/BV, P/E ratio, and the inflation in the liquidity of Jordanian commercial banks as a proxy for investors' decisions. The study also focused on measuring the impact of the ASE's liquidity as measured by the dummy in the decisions of Jordanian investors as measured by the liquidity of the Jordanian commercial banks. Consequently, the findings are illustrated as shown in the following tables:

Table 5.6.1: The Impact of Market Fundamentals in the TLTD

The following table is constructed in order to test the first sub-hypothesis which assumes that the fluctuations in the TDIR, M/BV ratio, P/E ratio and the inflation are positively affecting the liquidity of the Jordanian commercial banks. The liquidity of banks here is measured by using the total loans to total deposits ratio.

Regress D.TLTD D.M/BV D.TDIR D.P/E D. CPI D.ASEL_DUM, level(99)				
Source	**SS**	**Df**	**MS**	No. of obs.= 59 F(5, 53)= 0.41 Prob.> F = 0.8400 R^2= 0.0372 Adj R^2= -0.0536 Root MSE= .03622
Model	0.0026	5	0.0005	
Residual	0.0695	53	0.0013	
Total	0.0721	58	0.0012	

TLTD	**Coef.**	Std.Err.	T	P>t	[99% Conf. Interval]	
D.M/BV	0.0600	0.0780	0.7700	0.4450	-0.1485	0.2685
D.TDIR	-0.0167	0.0265	-0..6300	0.5320	-0.0875	0.0541
D.CPI	0.1513	0.8606	0.1800	0.8610	-2.1481	2.4508
D.P/E Ratio	0.0356	0.1412	0.2500	0.8020	-0.3418	0.4131
D.ASEL_ DUM	-0.0064	0.0170	-0.3800	0.7060	-0.0520	0.0390
_cons	-0.0058	0.0048	-1.2000	0.2350	-0.0187	0.0071

The multiple linear regression tests were used in order to examine the effect of the fluctuations in the TDIR, M/BV ratio, P/E ratio and the inflation rate in the liquidity of banks as measured by the TLTD ratio. Consequently, the results revealed that since the P-values of the TDIR, M/BV ratio, P/E ratio and the inflation are more than the level of significance. Therefore, the fluctuations in these variables do not impact the decisions of Jordanian investors as measured by the liquidity of banks. Additionally, the results report that there is no significant correlation between the liquidity of the ASE as measured by the dummy along with the liquidity of banks. However, the table shows that only 0.0372 variations in banks' liquidity are explained by the independent variables. However, the study also employed the VIF technique in order to check the status of collinearity between the independent variables. The results found that there is no autocorrelation among the explanatory variables. See results in table 5.1.1, appendix F, p. 491. In a further test, the study ap-

plied the Shapir-Wilk test in order to check whether the residuals are normally distributed or not. However, the results revealed that the residuals are not normally distributed. See results in table 5.1.2, appendix F, p. 492. Thereafter, the study applied the Johansen co-integration test in order to check whether or not the variables are significantly correlated on the long-run. The results of the Johansen tests are explained in the following table:

5.6.2: Johansen tests for Co-integration

The following table is constructed to test the first sub-hypothesis ($H_{2.1}$) which assumes a long-run integration between the fluctuations in the TDIR, M/BV ratio, P/E ratio and the inflation along with the liquidity of the Jordanian commercial banks. The liquidity of banks here is measured by using the total loans to total deposits ratio.

VEC-rank TLTD, M/BV, TDIR, P/E Ratio, CPI and ASEL_DUM, trend(Constant)

Lags (3) max

Johansen tests for Co-integration

Trend: Constant				No. of Obs. = 57	
Sample: Q4-2000-Q4-2014				Lags= 3	
Maximum					
Rank	**Max Statistics**	**1% Critical**	**H0**	**Trace Statistics**	**1% Critical**
0	41.85	45.10	R=0	103.18	109.27
1	28.06	38.77	R ≤1	67.41	76.07
2	20.97	32.24	R≤2	39.34	54.46

3	12.33	25.52	R≤3	18.37	35.65
4	5.44	.18.63	R≤4	6.04	20.04
5	0.59	6.65	R≤5	0.59	6.65
6			R≤6		

After running the Johansen Co-integration test the results showed that both the trace statistics and the max statistics values are lower than the critical values. Therefore, the null hypothesis is accepted. Meaning that the variables of interest are not co-integrated as well as there is no long-run causality running from the volatility in the TDIR, M/BV ratio, P/E ratio or the inflation towards the liquidity of banks as measured by the total loans/ total deposits ratio. In addition, the findings revealed that there is no long-run integration between banks' liquidity and the liquidity of ASE as measured by the dummy. Thus, since the results from the Johansen test confirmed that the variable are not integrated on the long run, the Vector Autoregressive model is applied in order to identify the nature of the relationship of the TDIR, M/BV ratio, P/E ratio, the inflation and the dummy along with the liquidity of banks as a proxy for the decisions of Jordanian investors. Results from the VAR test are described below:

5.6.3: Vector Autoregressive Model "VAR"

The following table is constructed to test the third sub-hypothesis ($H_{3.3}$) which assumes that there is a short-run causality running from the fluctuations in the TDIR, M/BV ratio, P/E ratio and the inflation towards the liquidity of the Jordanian commercial banks. The liquidity of banks here is measured by using the total loans to total deposits ratio.

	Coef.	Std. Error	Z	P > /Z/	99% Conf.	Interval
D_ TLTD						
TLTD						
L1.	1.5316	0.1416	10.8200	0.0000	1.1668	1.8963
L2.	-0.6593	0.2468	-2.6700	0.0080	-1.2951	-0.0235
L3.	-0.0444	0.1499	-0.3000	0.7670	-0.4307	0.3418
M/BV						
L1.	-0.0915	0.1066	-0.8600	0.3910	-0.3663	0.1833
L2.	0.0665	0.1811	0.3700	0.7130	-0.4000	0.5330
L3.	0.0523	0.1017	0.5100	0.6070	-0.2096	0.3143
TDIR						
L1.	-0.0031	0.0271	-0.1200	0.9080	-0.0730	0.0667
L2.	0.0407	0.0419	0.9700	0.3320	-0.0674	0.1488
L3.	0.0144	0.0252	-0.5700	0.5670	-0.0795	0.0506
CPI						
L1.	-0.4592	0.7445	-0.6200	0.5370	-2.3771	1.4586
L2.	-0.0854	1.2553	-0.0700	0.9460	-3.3190	3.1481
L3.	0.8917	0.8133	1.1000	0.2730	-1.2034	2.9869
P/E Ratio						
L1.	-0.0077	0.1397	-0.0600	0.9560	-0.3677	0.3522
L2.	0.0969	0.1815	0.5300	0.5930	-0.3706	0.5644

L3.	-0.1216	0.1150	-1.0600	0.2900	-0.4179	0.1746
ASEL_DUM						
L1.	0.0113	0.0129	0.8700	0.3830	-0.0220	0.0446
L2.	-0.0075	0.0144	-0.5300	0.6000	-0.0447	0.0296
L3.	0.0062	0.0134	0.4600	0.6450	-0.0285	0.0409
_Cons	-0.0158	0.0201	-0.7300	0.4320	-0.0678	0.0360

The above table shows that both the first and the second lag of the TLTD are significant to explain the liquidity of the Jordanian commercial banks in the short run. By contrast the first, second and the third lags of the TDIR, M/BV ratio, P/E ratio and the inflation are insignificantly correlated with the liquidity of banks as a proxy for the decisions of Jordanian investors. Meaning that, investors of Jordan do not use these fundamental variables in the process of decision making, as well as they are irrationally distributing their money into the Jordanian financial institutions. Additionally, the findings confirmed that the liquidity of banks is insignificantly impacted by the liquidity of the Amman Stock Exchange as measured by the dummy.

Table 5.6.4: Granger Causality Wald Test

The following test is applied as a post-estimation test in order to investigate whether the short-run relationship is really existed or not.

Equation	Excluded	Chi 2	df.	Prob. > Chi 2
TLTD	MBV	5.5111	3	0.1380

TLTD	TDIR	5.7632	3	0.1220
TLTD	CPI	5.6879	3	0.1280
TLTD	P/E Ratio	1.4054	3	0.7040
TLTD	ASEL_DUM	1.1041	3	0.7760
TLTD	ALL	14.9310	15	0.4560

The above table confirms that there is no short-run causality running from the volatility in the TDIR, M/BV, P/E ratio or the inflation to the liquidity of the Jordanian commercial banks. Likewise, the results revealed that there is no short-run integration for the liquidity of banks along with the liquidity of the Amman Stock Exchange as measured by the dummy. Moreover, the study concludes that the decisions of Jordanian investors as measured by the TLTD ratio are not affected by the volatility in the TDIR, M/BV ratio, P/E ratio or the inflation. However, for additional post-estimation tests regarding the residuals normality and the status of autocorrelation, see tables 5.2.1-5.2.2 in appendix G, p. 499-500.

Table 5.6.5: The Impact of Market Fundamentals in the LATA

The following table is constructed to test the first sub-hypothesis which assumes that the fluctuations in the TDIR, M/BV ratio, P/E ratio and the inflation are positively affecting the liquidity of the Jordanian commercial banks. The liquidity of banks here is measured by using the liquid assets to total assets ratio.

Regress D.LATA D.M/BV D.TDIR D.P/E ratio D. CPI D.ASEL_DUM, level(99)

Source	SS	Df	MS	No. of obs= 59
Model	0.0173	5	0.0034	F(5, 53)= 1.56
Residual	0.1176	53	0.0022	Prob > F = 0.1869
Total	0.1349	58	0.0023	R^2= 0.1284
				Adj R^2= -0.0462
				Root MSE= 0.0471

D.LATA	Coef.	Std.Err.	T	P>t	[99% Conf.	Inter-val]
D.M/BV	-0.0732	0.1015	-0.7200	0.4740	-0.3444	0.1980
D.TDIR.	0.0693	0.0345	2.0100	0.0490	-0.0227	0.1615
D.CPI	-2.3463	1.1195	-2.1000	0.0410	-5.3376	0.6450
D.P/E Ratio	0.1482	0.1837	0.8100	0.4240	-0.3428	0.6393
D.ASEL_DUM	-0.0083	0.0221	-0.3800	0.7090	-0.0676	0.0509
_cons	-0.0055	0.0063	-0.8700	0.3870	-0.0223	0.0113

The above table demonstrates that since the P-values of the TDIR, M/BV ratio, P/E ratio and the inflation are more than 1%, the fluctuations in these variables are not linked with

the decisions of Jordanian investors. In addition, the results implied that there is a non-significant correlation between the liquidity of the ASE and the liquidity of Jordanian commercial bank as measured by the LATA ratio. However, the table shows that only 0.1284 variations in the banks' liquidity is explained by the TDIR, M/BV ratio, P/E ratio and the inflation. However, the study applied the Johansen co-integration test in order to check whether or not the variables are significantly correlated on the long-run. The results of the Johansen test are shown in the following table:

Table 5.6.6: Johansen tests for Co-integration

The following table is constructed to test the first sub-hypothesis ($H_{2.1}$) which assumes a long-run integration between the fluctuations in the TDIR, M/BV ratio, P/E ratio and the inflation along with the liquidity of the Jordanian commercial banks. The liquidity of banks here is measured by using the liquid assets to total assets ratio.

VEC-rank LATA, M/BV, TDIR, P/E, CPI, ASE_DUM, trend(Constant) Lags (3) max

Johansen tests for Co-integration

Trend: Constant				No. of Obs. = 57	
Sample: Q4-2000-Q4-2014				Lags= 3	
Maximum					
Rank	**Max Statistics**	**1% Critical**	**H_0**	**Trace Statistics**	**1% Critical**
0	51.43	45.10	R=0	127.13	103.18
1	29.18	38.77	R ≤1	75.69	76.07

2	19.03	32.24	R≤2	46.50	54.46
3	16.47	25.52	R≤3	27.47	35.65
4	7.63	18.63	R≤4	10.99	20.04
5	3.36	6.65	R≤5	3.36	6.65
6	.	.	R≤6	.	.

After running the Johansen Co-integration test the results showed that there is a long integration between the volatility in the TDIR, M/BV ratio, P/E ratio and the inflation along with the liquidity of the Jordanian commercial banks as measured by the liquid assets to total assets. Additionally, the findings revealed that the liquidity of the Jordanian commercial banks is significantly related to the liquidity of the ASE on the long-run. Thus, since the results from the Johansen test showed that the variables are significantly integrated on the long-run, the Vector Error Correction Model is applied in order to explain the nature of the relationship between the TDIR, M/BV ratio, P/E ratio, the rate of inflation and the ASEL_DUM along with the liquidity of banks as measured by the LATA ratio. Moreover, the results of the VECM test are described below:

Table 5.6.7: Vector Error Correction Model "VECM"

The following table is constructed to test the first sub-hypothesis ($H_{3.1}$) which assumes that a long-run causality running from the fluctuations in the TDIR, M/BV ratio, P/E ratio and the inflation towards the liquidity of the Jordanian commercial banks. The liquidity of banks here is measured by using the liquid assets to total assets ratio.

	Coef.	Std. Er-ror	Z	P > /Z/	99% Conf.	Interval
D_LATA						
_Ce1						
L1	-0.3013	0.0737	-4.0900	0.0000	-0.4913	-0.1113
LATA						
LD.	0.8263	0.1342	6.1600	0.0000	0.4806	1.1720
L2D.	0.0537	0.1201	0.4500	0.6550	-0.3631	0.2556
TDIR						
LD.	0.0213	0.2371	0.9000	0.3680	-0.0824	0.0397
L2D	0.0048	0.2245	0.2200	0.8290	-0.0529	0.0626
MBV						
LD.	0.0179	0.0844	0.2100	0.8320	-0.2355	0.1997
L2D	0.0481	0.0794	0.6100	0.5450	-0.1565	0.2527
CPI						
LD	2.6834	0.8296	3.2300	0.0010	0.5463	4.8205
L2D	-0.8315	0.7746	1.0700	0.2830	-2.8268	1.1638
P/E Ratio						
LD	0.14493	0.1120	1.2900	0.1960	-0.1437	0.4336
L2D	0.0945	0.1119	0.8400	0.3980	-0.1937	0.3827
ASE_DUM						
LD.	0.0135	0.0130	1.0400	02980	-0.0199	0.0470
L2D.	0.0045	0.0117	0.3800	0.7010	-0.0257	0.0347

_Cons	0.0020	0.0032	0.6400	0.5240	-0.0063	0.0104

The results confirmed that there are long-run associations between the TDIR, M/BV ratio, P/E ratio and the inflation along with the liquidity of the Jordanian commercial banks as measured by the liquid assets to total assets ratio. In addition, the results proved that the liquidity of the ASE as captured by the dummy is significantly correlated with the liquidity of banks. In other words, the results showed that the increase in the TDIR, M/BV ratio, P/E ratio and the inflation motivates investors of Jordan to employ their funds into the banks instead of investing them in the ASE. Thus, since the results revealed that the increase in the M/BV ratio and the P/E ratio encourages investors of Jordan to liquidate their securities in order to deposit them into the banks, investors of Jordan are behaving rationally on the long-run or they are classified as risk averse investors, because they do not invest in the overvalued securities. Furthermore, the results of the VECM showed that a one per cent increase in the first and second lag of the market liquidity leads to increase the liquidity of the Jordanian commercial banks by 0.135% and 0.045%, respectively.

Furthermore, the study employed the technique of Wald test (χ^2) in order to examine whether the TDIR, M/BV ratio, P/E ratio, the inflation or the dummy cause a granger to the liquidity of the Jordanian commercial banks in the short-run. Consequently, the findings discovered that there is a short-run causality running from the volatility in the TDIR, M/BV ratio and the P/E ratio towards the liquidity of the Jordanian commercial banks. Meaning that, in the short-run investors of Jordan behave rationally towards the fluctuations in the TDIR, M/BV ratio and the P/E as well as they employ these variables in the process of decision making. However, the results documented a non-significant correla-

tion between the liquidity of the ASE and the inflation along with the decisions of Jordanian investors as measured by the liquidity of Jordanian commercial banks on the short-run. See table 5.2.3-5.2.5, in appendix G, p. 500-502, for the results of Wald, Jarque-Bera and LM tests.

Table 5.6.8: The Impact of Market Fundamentals in the LATD Ratio

The following table is constructed to test the first sub-hypothesis which assumes that the fluctuations in the TDIR, M/BV ratio, P/E ratio and the inflation are positively affecting the liquidity of the Jordanian commercial banks. The liquidity of banks here is measured by the liquid assets to total deposits ratio.

Regress D.LATD D.M/BV D.TDIR D. P/E D. CPI D.ASEL_DUM, level(99)

Source	SS	Df	MS	No. of obs= 59
Model	0.0114	5	0.0022	F(5, 53)= 1.1900
Residual	0.1020	53	0.0019	Prob > F = 0.3254
Total	0.1135	58	0.0019	R^2= 0.1011
				Adj R^2= -0.0163
				Root MSE= 0.0438

D.LATD	Coef.	Std.Err.	T	P>t	[99% Conf.	Interval]
D.M/BV	-0.0969	0.0945	-1.0300	0.3100	-0.3496	0.1557

D.TDIR	0.0700	0.0321	2.1800	0.0340	-0.0158	0.1558
D.CPI	-0.2467	1.0429	-0.2400	0.8400	-3.0332	2.5397
P/E Ratio	0.1247	0.1712	0.7300	0.4700	-0.3327	0.5821
D.ASEL_DUM	-0.0004	0.0206	-0.0200	0.9820	-0.0556	0.0547
_cons	-0.0075	0.0058	-1.2800	0.2050	-0.0232	0.0081

After regressing the liquidity of banks as measured by the liquid assets/ total deposits ratio on the TDIR, M/BV ratio, P/E ratio and the inflation, the results revealed that just a 0.1011 variation in the banks' liquidity is explained by the fluctuations in the TDIR, M/BV ratio, P/E ratio and the inflation. Therefore, the findings proved that the volatility in the TDIR, M/BV ratio, P/E ratio and the inflation has an insignificant effect on the decisions of Jordanian investors as measured by the liquidity of the Jordanian commercial banks. Similarly, the findings find that the relationship between the liquidity of the Amman Stock Exchange along with the liquidity of banks is insignificant. However, to find whether there is any valuable long-run correlation among the variables, the Johansen co-integration test is employed. Results from the Johansen test are explained below:

Table 5.6.9: Johansen tests for Co-integration

The following table is constructed to test the first sub-hypothesis ($H_{2.1}$) which assumes a long-run integration between the fluctuations in the TDIR, M/BV ratio, P/E ratio and the inflation along with the liquidity of the Jordanian commercial banks. The liquidity of banks here is measured by the liquid assets to total deposit ratio.

VEC-rank LATD, M/BV, TDIR, P/E, CPI, ASE_DUM, trend(Constant) Lags (3) max

Johansen tests for Co-integration

Trend: Constant				No. of Obs. = 57	
Sample: Q4-2000-Q4-2014				Lags= 3	
Maximum					
Rank	**Max Statistics**	**1% Critical**	**H_0**	**Trace Statistics**	**1% Critical**
0	51.15	45.10	R=0	106.80	103.18
1	28.31	38.77	R ≤1	75.01	76.07
2	19.03	32.24	R≤2	46.64	54.46
3	15.67	25.52	R≤3	27.61	35.65
4	8.06	18.63	R≤4	.11.95	20/04
5	3.85	6.65	R≤5	3.87	6.65
6	.		R≤6		

Since the results from the Johansen test showed that both the trace and max values are higher than the critical values, the null hypothesis was rejected. Meaning that, the examined variables are significantly integrated on the long-run. Therefore, there are long-run

relations between the volatility in the TDIR, M/BV ratio, P/E ratio and the inflation along with the liquidity of the Jordanian commercial banks as measured by the liquid assets to total deposits ratio. Additionally, the findings showed that the liquidity of banks is statistically impacting by the liquidity of the Amman Stock Exchange as measured by the dummy. However, to investigate whether this long-run integration is really existed; the Vector Error Correction Model is applied in order to explain the nature of the relationship between the TDIR, M/BV ratio, P/E ratio, the inflation and the ASEL_DUM along with the liquidity of the Jordanian commercial banks. The results of the VECM test are described below:

Table 5.6.10: Vector Error Correction Model "VECM"

The following table is constructed to test the first sub-hypothesis ($H_{3.1}$) which assumes that a long-run causality running from the fluctuations in the TDIR, M/BV ratio, P/E ratio and the inflation towards the liquidity of the Jordanian commercial banks. The liquidity of banks here is measured by using the liquid assets to total deposit ratio.

	Coef.	Std. Error	Z	P > /Z/	99% Conf.	Interval
D_LATD						
_Ce1						
L1	-0.1205	0.0614	-1.9600	0.0500	-0.2789	0.0378
LATD						
LD.	0.7811	0.1440	5.4200	0.0000	0.4100	1.1521

L2D.	-0.1585	0.1133	-1.4000	0.1620	-0.4504	0.1333
TDIR						
LD.	0.0140	0.0209	0.6700	0.5030	-0.0398	0.0679
L2D.	0.0033	0.0206	0.1600	0.8700	-0.0497	0.0564
MBV						
LD.	0.0348	0.0793	0.4400	0.6610	-0.1694	0.2391
L2D.	-0.0539	0.0778	-0.6900	0.4890	-0.2545	0.1467
CPI						
LD	1.6786	0.6651	2.5200	0.0120	-0.0346	3.3920
L2D	-1.1525	0.7013	-1.6400	0.1000	-2.3591	0.6539
P/E Ratio						
LD	0.1393	0.1021	1.3600	0.1790	-0.1237	0.4024
L2D	-0.0335	0.0941	-0.3600	0.7220	-0.2760	0.2089
ASE_DUM						
LD.	-0.0220	0.0111	-1.9700	0.0490	-0.0508	0.0067
L2D.	-0.0040	0.1033	-0.3900	0.6930	-0.0306	0.0225
_Cons	-0.0022	0.0029	-0.7500	0.4530	-0.0098	0.0054

The results proved that there are no long-run correlations between the TDIR, M/BV ratio, P/E ratio or the inflation along with the liquidity of the Jordanian commercial banks as measured by the liquid assets to total deposits ratio. In addition, the findings revealed that the liquidity of the Amman Stock Exchange as captured by the dummy is insignificantly correlated with the liquidity of banks on the long-run. Therefore, the study concludes that investors of Jordan are classified as irrational investors, because they do not use market

fundamentals like the TDIR, M/BV ratio, P/E ratio or the inflation in the process of decision making. Furthermore, the study applied the Wald test in order to examine whether the liquidity of banks is being granger cause by the TDIR, M/BV ratio, P/E ratio, the inflation rate or the dummy on the short-run. Consequently, the findings discovered that there is a short-run causality running from the volatility in the TDIR and the M/BV ratio towards the liquidity of Jordanian commercial banks as measured by the LATD ratio. In other words, the results showed that on the short-run investors of Jordan are found to behave rationally towards the fluctuations in the TDIR and the M/BV ratio. See table 5.2.6-5.2.8, in appendix G, p. 503-505, for the results of the Wald, Jarque-Bera and the LM tests.

Table 5.6.11: The Impact of Market Fundamentals in the TDTA Ratio

The following table is constructed to test the first sub-hypothesis which assumes that the fluctuations in the TDIR, M/BV ratio, P/E ratio and the inflation are positively affecting the liquidity of the Jordanian commercial banks. The liquidity of banks here is measured by using the total deposit to total assets ratio.

Regress D.TDTA D.M/BV D.TDIR D. P/E D. CPI D.ASEL_DUM, level(99)

Source	SS	Df	MS	No. of obs= 59
Model	0.0173	3	0.0034	F(5, 53)= 1.56
Residual	0.1176	53	0.0022	Prob > F = 0.1869
Total	0.1349	58	0.0023	R^2= 0.1284
				Adj R^2= -0.0462
				Root MSE= 0.0471

D.TDTA	Coef.	Std.Err.	T	P>t	[99% Conf. Interval]	
D.M/BV	-0.0732	0.1015	-0.7200	0.4740	-0.3444	0.1980
D.TDIR	0.0693	0.0345	2.0100	0.0490	-0.0227	0.1615
D.CPI	-2.3463	1.1195	-2.1000	0.0410	-5.3376	0.6450
D.P/E Ratio	0.1482	0.1837	0.8100	0.4240	-0.3428	0.6393
D.ASEL_DUM	-0.0083	0.0221	-0.3800	0.7090	-0.0676	0.0509
_cons	-0.0055	0.0063	-0.8700	0.3870	-0.0223	0.0113

Through regressing the liquidity of banks as measured by the total deposits/total assets ratio on the TDIR, M/BV ratio, P/E ratio and the inflation the results documented that just 0.1284 variation in banks' liquidity is explained by the fluctuations in the TDIR, M/BV ratio, P/E ratio and the inflation. Therefore, the findings revealed that the fluctuations in the explanatory variables are insignificantly correlated with the decisions of Jordanian investors as measured by the liquidity of the Jordanian commercial banks. Furthermore, the results implied that there is no significant correlation between the liquidity of the Amman Stock Exchange as measured by the dummy and the liquidity of banks as a proxy for investors' decisions. However, the study applied the Johansen test in order to examine

whether the variables of interest are integrated on the long run or not. Results from the Johansen test are discussed below:

Table 5.6.12: Johansen tests for Co-integration

The following table is constructed to test the first sub-hypothesis ($H_{2.1}$) which assumes a long-run integration between the fluctuations in the TDIR, M/BV ratio, P/E ratio and the inflation along with the liquidity of the Jordanian commercial banks. The liquidity of banks here is measured by using the total deposits to total assets ratio.

VEC-rank TDTA, M/BV, TDIR, P/E, CPI, ASE_DUM, trend(Constant) Lags (3) max

Johansen tests for Co-integration

Trend: Constant				No. of Obs. = 57	
Sample: Q4-2000-Q4-2014				Lags= 3	
Maximum					
Rank	**Max Sta-tistics**	**1% Critical**	**H_0**	**Trace Statistics**	**1% Critical**
0	51.43	45.10	R=0	127.13	103.18
1	29.18	38.77	R ≤1	75.69	76.07
2	19.03	32.24	R≤2	46.50	54.46
3	16.47	25.52	R≤3	27.47	35.65
4	7.63	18.63	R≤4	10.99	20.04
5	3.36	6.65	R≤5	3.36	6.65
6	.	.	R≤6	.	.

After running the Johansen Co-integration test the results showed that there is a long integration between the volatility in the TDIR, M/BV ratio, P/E ratio and the inflation along with the liquidity of the Jordanian commercial banks. Additionally, the findings revealed that the liquidity of the Jordanian commercial banks is significantly related to the liquidity of the ASE on the long-run. Thus, since the results from the Johansen test showed that the variables are significantly integrated on the long-run, the Vector Error Correction Model is applied in order to explain the nature of the relationship between the TDIR, M/BV ratio, P/E ratio, the inflation and the ASEL_DUM along with the liquidity of banks as measured by the TDTA ratio. Moreover, the results of the VECM test are described below:

Table 5.6.13: Vector Error Correction Model "VECM"

The following table is constructed to test the first sub-hypothesis ($H_{3.1}$) which assumes a long-run causality running from the fluctuations in the TDIR, M/BV ratio, P/E ratio and the inflation towards the liquidity of the Jordanian commercial banks. The liquidity of banks here is measured by using the total deposits to total assets ratio.

	Coef.	**Std. Error**	**Z**	**P > /Z/**	**99% Conf.**	**Interval**
D_TDTA						
_Ce1						
L1	-0.3013	0.0737	-4.0900	0.0000	-0.4913	-0.1113
TDTA						
LD.	0.8263	0.1342	6.1600	0.0000	0.4806	1.1720

L2D.	0.0537	0.1201	0.4500	0.6550	-0.3631	0.2556
TDIR						
LD.	0.0213	0.2371	0.9000	0.3680	-0.0824	0.0397
L2D	0.0048	0.2245	0.2200	0.8290	-0.0529	0.0626
MBV						
LD.	0.0179	0.0844	0.2100	0.8320	-0.2355	0.1997
L2D	0.0481	0.0794	0.6100	0.5450	-0.1565	0.2527
CPI						
LD	2.6834	0.8296	3.2300	0.0010	0.5463	4.8205
L2D	-0.8315	0.7746	1.0700	0.2830	-2.8268	1.1638
P/E Ratio						
LD	0.14493	0.1120	1.2900	0.1960	-0.1437	0.4336
L2D	0.0945	0.1119	0.8400	0.3980	-0.1937	0.3827
ASE_DUM						
LD.	0.0135	0.0130	1.0400	02980	-0.0199	0.0470
L2D.	0.0045	0.0117	0.3800	0.7010	-0.0257	0.0347
_Cons	0.0020	0.0032	0.6400	0.5240	-0.0063	0.0104

The results confirmed that there are long-run associations between the TDIR, M/BV ratio, P/E ratio and the inflation rate along with the liquidity of the Jordanian commercial banks as measured by the total deposits to total assets ratio. In addition, the results proved that the liquidity of the ASE as captured by the dummy is significantly correlated with the liquidity of banks. In other words, the results showed that the increase in the TDIR, M/BV

ratio, P/E ratio and the inflation motivates investors of Jordan to employ their funds into the banks instead of investing them in the ASE. Thus, since the results revealed that the increase in the M/BV ratio and the P/E ratio encourages investors of Jordan to liquidate their securities in order to deposit them into the banks, investors of Jordan are behaving rationally on the long-run or they are classified as risk averse investors, because they do not invest in the overvalued securities. Furthermore, the results of the VECM showed that a one per cent increase in the first and second lag of the market liquidity leads to increase the liquidity of the Jordanian commercial banks by 0.135% and 0.045%, respectively.

Furthermore, the study employed the technique of Wald test (χ^2) in order to examine whether the TDIR, M/BV ratio, P/E ratio, the inflation or the dummy cause a granger to the liquidity of the Jordanian commercial banks in the short-run. Consequently, the findings discovered that there is a short-run causality running from the volatility in the TDIR, M/BV ratio and the P/E ratio towards the liquidity of the Jordanian commercial banks. Meaning that, in the short-run investors of Jordan behave rationally towards the fluctuations in the TDIR, M/BV ratio and the P/E as well as they are employing these variables in the process of decision making. However, the results documented a non-significant correlation between the liquidity of the ASE and the inflation along with the decisions of the Jordanian investors as measured by the liquidity banks. See table 5.2.9-5.2.11, in appendix G, p. 505-507, for the results from the Wald, Jarque-Bera and the LM tests.

5.7 The Effect of Market Fundamentals in the Liquidity of Amman Stock Exchange

The current research applied the multiple linear regression tests and the Johansen co-integration test in order to measure the impact of the fluctuations in market fundamental in the liquidity of the ASE as a proxy for investors' decisions. The study also focused on assessing the impact of banks' liquidity as captured by the dummy in the liquidity of the ASE. Consequently, the findings are illustrated as shown in the following tables:

Table 5.7.1: The Impact of Market Fundamentals in the Turnover Ratio

The following table is constructed to test the second sub-hypothesis ($H_{1:2}$) which assumes that the fluctuations in the TDIR, M/BV ratio, P/E ratio and the inflation are negatively affecting the liquidity of the Amman Stock Exchange. According to the following table, the liquidity of the ASE is measured by using the turnover ratio.

Regress D. Turnover D.M/BV D.TDIR D. P/E D. CPI D .JCBL_DUM, level(99)

Source	SS	Df	MS	No. of obs.= 59
Model	0.0276	5	0.0055	F(5, 53)= 4.50
Residual	0.065	53	0.0012	Prob > F = 0.001
Total	0.0929	58	0.0016	R^2= 0.297
				Adj R^2= 0.2316
				Root MSE= 0.0350

D. TOR	Coef.	Std.Err.	T	P>t	[99% Conf. Interval]

D.M/BV	-0.1814	0.0756	-2.4000	0.0200	-0.3834	0.0205
D.TDIR	0.0290	0.0256	1.1300	0.2640	-0.0396	0.0976
D. CPI	-3.4715	0.8337	-4.1600	0.0000	-5.6992	-1.2438
D.P/E Ratio	0.1695	0.1368	1.2400	0.2210	-0.1961	0.5352
D.JCBL_DUM	0.0128	0.0165	0.7700	0.4420	-0.0313	0.0569
_cons	0.0088	0.0046	1.8800	0.0650	-0.0037	0.0213

The regression results showed that the fluctuations in the TDIR, M/BV ratio and the P/E ratio do not affect the liquidity of the ASE as measured by the turnover ratio. In other words, the findings proved that investors of Jordan do not realise the role of market fundamentals in the process of decision making, or might they use some other techniques in order to evaluate their investment decisions. For instance, the above table demonstrates that only 29.7% of the variation in the dependent variable is explained by a variation in the explanatory variables by the same ratio. However, the results proved that variables like the inflation play a vital role in affecting the decisions of Jordanian investors as measured by the liquidity of the Amman Stock Exchange. In other words, the results showed that a 1% increase in the inflation leads to decrease the liquidity of the ASE as measured by the turnover ratio by -3.4715. Thus, since the inflation is negatively impacting the decisions of Jordanian investors, the study concluded that the increase in inflation motivates investors

of Jordan to deposit their financial resources into the banks, while the decrease in inflation encourages investors to invest their funds into the Amman Stock Exchange. Moreover, the study concludes that investors of Jordan behave rationally towards the fluctuations in the inflation. Furthermore, the results also revealed that there is no correlation between the liquidity of the Jordanian banks as measured by the dummy along with the market's liquidity. However, to check whether there is a long-run correlation between the market fundamentals along with the market's liquidity, the Johansen test is employed. Results from the Johansen co-integration technique are explained below:

Table 5.7.2: Johansen tests for Co-integration

The following table is constructed to test the second sub-hypothesis ($H_{2.2}$) which assumes a long-run integration between the fluctuations in the TDIR, M/BV ratio, P/E ratio and the inflation along with the liquidity of the Amman Stock Exchange. According to the following table, the liquidity of the ASE is measured by using the turnover ratio.

VEC-rank turnover-ratio, M/BV, TDIR, P/E, CPI, JCBL_DUM, trend(Constant) Lags (3) max

Johansen tests for Co-integration

		Trend: Constant			No. of Obs. = 57
		Sample: Q4-2000-Q4-2014			Lags= 3
	Maximum				
Rank	**Max Statistics**	**1% Critical**	**H_0**	**Trace Statistics**	**1% Critical**

0	46.84	45.10	R=0	133.96	103.18
1	35.33	38.77	R ≤1	87.12	76.07
2	22.69	32.24	R≤2	51.78	54.46
3	17.72	25.52	R≤3	29.09	35.65
4	10.77	18.63	R≤4	11.36	20.04
5	0.59	6.65	R≤5	0.59	6.65
6	.		R≤6	.	.

The findings discovered that the examined variables are co-integrated in the first order I (1), as well as there is a long-run association between the volatility in the TDIR, M/BV ratio, P/E ratio and the inflation along with the liquidity of the Amman Stock Exchange as measured by the turnover ratio. In addition, the results revealed that the liquidity of the Jordanian commercial banks as captured by the dummy is significantly correlated with the liquidity of the ASE as measured by the turnover ratio. Therefore, the Vector Error correction model is applied in order to check if these relationships are really existed or not. Results from the VECM test are described in the following table:

Table 5.7.3: Vector Error Correction Model "VECM"

The following table is constructed to test the second sub-hypothesis ($H_{3.2}$) which assumes that there is a long-run causality running from the fluctuations in the TDIR, M/BV ratio, P/E ratio and the inflation towards the liquidity of the Amman Stock Exchange. According to the following table, the liquidity of the ASE is measured by using the turnover ratio.

	Coef.	Std. Error	Z	P > /Z/	99% Conf.	Interval
D_TOR						
_Ce1						
L1	-0.095	0.024	-3.900	0.000	-0.158	-0.032
TOR						
LD.	0.815	0.160	5.100	0.000	0.403	1.228
L2D.	-0.170	0.148	-1.140	-0.253	-0.553	0.213
TDIR						
LD.	0.231	0.022	1.040	0.297	-0.034	0.080
L2D.	0.029	0.024	1.210	0.228	-0.033	0.091
MBV						
LD.	-0.050	0.087	-0.580	0.561	-0.173	0.274
L2D.	-0.056	0.086	-0.660	0.512	-0.279	0.166
CPI						
LD.	2.058	0.731	2.810	0.005	0.173	3.942
L2D.	1.287	0.804	1.600	0.110	-3.359	0.784
P/E Ratio						
LD.	-0.074	0.103	-0.710	0.475	-0.193	0.341
L2D.	-0.219	0.096	-2.280	0.023	-0.468	0.028
JCBL_DUM						
LD.	-0.008	0.011	-0.700	0.481	-0.038	0.022
L2D.	0.011	0.010	1.060	0.290	-0.016	0.033

_Cons	0.001	0.003	0.610	0.542	-0.006	0.009

The above table showed that there is a long-run causality running from the volatility in the TDIR, M/BV ratio, P/E ratio and the inflation towards the liquidity of the Amman Stock Exchange, as measured by the turnover ratio. Therefore, the decisions of Jordanian investors as captured by the market' liquidity are significantly impacted by the fluctuations in market fundamentals. In other words, the results revealed that the increase in the TDIR, the inflation, and the M/BV ratio is positively impacting the liquidity of the ASE as a proxy for investors' decision. Meaning that, investors of Jordan are irrationally behaving towards the fluctuations in the TDIR, M/BV ratio and the inflation, because they are entering the market when the financial securities are supposed to be traded over their intrinsic values. However, the first lag of banks' liquidity as measured by the dummy is found to be negatively related with the liquidity of the Amman Stock Exchange. By contrast, the second lag is found to be positively impacting the decisions of Jordanian investors as measured by the turnover ratio. For instance, a 1% increase in banks' liquidity decreases the liquidity of the Amman Stock Exchange by 0.08%, and a 1% increase leads to increase the market's liquidity by 0.11%. However, to find if the examined variables are integrated on the short -run or not, the Wald $\chi 2$ technique is employed.

Consequently, the results proved that the volatility in the TDIR, M/BV ratio, P/E ratio and the inflation are significantly impacting the decisions of Jordanian investors on the short-run. However, the liquidity of the Jordanian commercial banks as measured by the dummy is found to be insignificantly impacting the liquidity of the Amman Stock Exchange as measured by the turnover ratio. Moreover, the study concluded that investors of Jordan

use market fundamentals like the TDIR, M/BV ratio, P/E ratio and the inflation in the process of decision making. Results from Wald, Jarque-Bera and LM tests are demonstrated in table 5.3.1-5.3.3 in appendix G, p. 508-510.

Table 5.7.4: The Impact of Market Fundamentals in the Trading Volume

The following table is constructed to test the second sub-hypothesis ($H_{1:2}$) which assumes that the fluctuations in the TDIR, M/BV ratio, P/E ratio and the inflation are negatively affecting the liquidity of the Amman Stock Exchange. According to the following table, the liquidity of the ASE is measured by using the trading volume.

Regress D. Trading-volume D.M/BV D.TDIR D. P/E D. CPI D.JCBL_DUM, level(99)

Source	SS	Df	MS	No. of obs= 59
Model	0.0331	5	0.0066	F(5, 53)= 5.53
Residual	0.0635	53	0.0011	Prob > F = 0.0004
Total	0.0967	58	0.0016	R^2= 0.3429
				Adj R^2= 0.2809
				Root MSE= 0.0346

D.TV	Coef.	Std.Err.	T	P>t	[99% Conf.	Interval]
D.M/BV	-0.1680	0.0746	-2.2500	0.0290	-0.3674	0.0313
D.TDI	0.0286	0.0253	1.1300	0.2630	-0.0390	0.0964

R

D. CPI	-3.888	0.8230	-4.7200	0.0000	-6.0871	-1.6893
P/E Ratio	0.0393	0.1351	0.2900	0.7720	-0.3216	0.4003
D.JCBL_DUM	0.0138	0.0163	0.8500	0.4000	-0.0297	0.0574
_cons	0.0203	0.0046	4.4000	0.0000	0.0080	0.0327

After regressing the liquidity of the ASE on the TDIR, M/BV ratio, inflation and the P/E ratio, the results revealed that only a 34.29% variation in the trading volume as a proxy for ASE's liquidity is explained by the volatility in the explanatory variables. Meaning that, the impact of these variables in the decisions of Jordanian investors is very weak. However, the results revealed that the fluctuation in the inflation is negatively impacting the decisions of Jordanian investors as measured by the stock market's liquidity. More specifically, the results showed that a 1% increase in the inflation leads to decrease the trading volume of ASE by 3.888. Therefore, the findings discovered that investors of Jordan are rationally behaving towards the volatility in the inflation. In other words, the findings revealed that the decrease in the inflation motivates investors of Jordan to invest in the Amman Stock Exchange. In addition, the results confirmed that there is no correlation between the liquidity of banks along with the market's liquidity. Moreover, investors of Jor-

dan are found to behave irrationally towards the volatility in the TDIR, M/BV ratio and the P/E ratio.

Table 5.7.5: Johansen tests for Co-integration

The following table is constructed to test the second sub-hypothesis ($H_{2.1}$) which assumes a long-run integration between the fluctuations in the TDIR, M/BV ratio, P/E ratio and the inflation along with the liquidity of the Amman Stock Exchange. According to the following table, the liquidity of the ASE is measured by using the trading volume.

VEC-rank Trading-Volume, M/BV, TDIR, P/E, CPI, JCBL_DUM, trend(Constant) Lags (3) max

Johansen tests for Co-integration

Trend: Constant				No. of Obs. = 57	
Sample: Q4-2000-Q4-2014				Lags= 3	
Maximum					
Rank	**Max Statistics**	**1% Critical**	**H_0**	**Trace Statistics**	**1% Critical**
0	46.86	45.10	R=0	126.63	103.18
1	29.60	38.77	R ≤1	79.76	76.07
2	23.82	32.24	R≤2	50.16	54.46
3	17.46	25.52	R≤3	26.33	35.65
4	7.80	18.63	R≤4	8.87	20.04
5	1.07	6.65	R≤5	1.07	6.65

6	.	R≤6

The findings of the Johansen test discovered that the examined variables are co-integrated as well as there is a long-run association between the volatility in the TDIR, M/BV ratio, P/E ratio and the inflation along with the liquidity of the Amman Stock Exchange as measured by the trading volume. Additionally, the results showed that the liquidity of the Jordanian commercial banks as captured by the dummy is significantly integrated with the market's liquidity on the long-run. Therefore, the Vector Error Correction Model is applied in order to identify the nature of the relationship between the dependent and the independent variables. The results of the VECM test are described in the following table:

Table 5.7.6: Vector Error Correction Model "VECM"

The following table is constructed to test the second sub-hypothesis ($H_{3.2}$) which assumes that there is a long-run causality running from the fluctuations in the TDIR, M/BV ratio, P/E ratio and the inflation towards the liquidity of the Amman Stock Exchange. According to the following table, the liquidity of the ASE is measured by using the trading volume.

	Coef.	Std. Error	Z	P > /Z/	99% Conf.	Interval
D_ TV						
_Ce1						
L1	-0.013	0.005	-2.350	0.019	-0.027	0.001
TV						
LD.	0.754	0.176	4.270	0.000	0.299	1.209

L2D.	-0.212	0.189	-1.120	0.263	-0.700	0.275
TDIR						
LD.	0.028	0.023	1.200	0.231	-0.032	0.089
L2D.	0.008	0.025	0.330	0.744	-0.057	0.074
MBV						
LD.	0.009	0.095	0.010	0.992	-0.245	0.247
L2D.	-0.084	0.104	-0.810	0.419	-0.352	0.184
CPI						
LD.	0.685	0.756	0.910	0.365	-1.263	2.634
L2D.	-0.986	0.737	-1.340	0.181	-2.885	0.912
P/E Ratio						
LD.	0.049	0.112	0.440	0.657	-0.239	0.339
L2D.	-0.138	0.106	-1.290	0.196	-0.412	0.136
JCBL_DUM						
LD.	-0.012	0.011	-1.090	0.276	-0.043	0.017
L2D.	0.007	0.011	0.610	0.545	-0.023	0.037
_Cons	0.000	0.003	0.230	0.822	-0.009	0.010

The above table does not validate the results of the Johansen co-integration tests. Therefore, the findings proved that there is no long-run integration between the volatility in the TDIR, M/BV ratio, P/E ratio or the inflation along with the liquidity of the Amman Stock Exchange. Additionally, the results discovered that the liquidity of the Jordanian commercial banks as captured by the dummy is not linked with the market's liquidity on the long-

run. However, to find if the variables are integrated on the short -run or not, the Wald test was applied. Consequently, the results proved that the volatility in the TDIR, M/BV ratio, P/E ratio and the inflation are significantly impacting the decisions of Jordanian investors on the short-run. Likewise, the results proved that variables including the liquidity of the Jordanian commercial banks are integrated with the market's liquidity as measured by trading volume. Moreover, the study concluded that on the short-run, investors of Jordan behave rationally towards the volatility in market fundamentals like the TDIR, M/BV ratio, P/E ratio and the inflation. Additionally, investors of Jordan rely on the liquidity of banks in order to evaluate their short-run investment in the Amman Stock Exchange. For the results from the Wald, Jarque-Bera and LM tests, see table 5.3.4-5.3.6 in appendix G, p.510-512.

Table 5.7.7: The Impact of Market Fundamentals in the Value Traded

The following table is constructed to test the second sub-hypothesis ($H_{1:2}$) which assumes that the fluctuations in the TDIR, M/BV ratio, P/E ratio and the inflation are negatively affecting the liquidity of the Amman Stock Exchange. According to the following table, the liquidity of the ASE is measured by using the value traded.

Regress D. Value-Traded D.M/BV D.TDIR D. P/E D. CPI D.JCBL_DUM, level(99)

Source	SS	Df	MS	No. of obs= 59
Model	0.0296	5	0.0059	F(5, 53)= 0.57
Residual	0.5512	53	0.0104	Prob > F = 0.7221

Total		0.5809	58	0.0100	R^2= 0.0511 Adj R^2= -0.0384 Root MSE= 0.1019	
D. VT	Coef.	Std.Err.	T	P>t	[99% Conf. Inter-val]	
D.M/BV	-0.0427	0.2197	-0.1900	0.8470	-0.6299	0.5444
D.TDIR	-0.0039	0.0746	-0.0500	0.9580	-0.2035	0.1955
D.CPI	-3.1309	2.4237	-1.2900	0.2020	-9.6066	3.3447
D.P/E Ratio	0.2058	0.3978	0.5200	0.6070	-0.8572	1.2689
D.JCBL_ DUM	0.0366	0.0480	0.7600	0.4490	-0.0917	0.1649
_cons	0.0164	0.0136	1.2000	0.2340	-0.0200	0.0529

The above table showed that only 0.0511 variations in the value traded are explained by the fluctuations in the TDIR, M/BV ratio, P/E ratio, the inflation and the dummy, by the same percentage. Therefore, the results showed that the fluctuations in the TDIR, M/BV ratio, P/E ratio and the inflation rate are insignificantly impacting the decisions of Jordanian investors as proxied by the market's liquidity. Furthermore, the findings argued that there is no significant correlation between the liquidity of Jordanian commercial banks as

captured by the dummy along with the liquidity of the Amman Stock Exchange as measured by the value traded. However, to check whether or not the variables are integrated on the long-run, results from the Johansen test are discussed below:

Table 5.7.8: Johansen tests for Co-integration

The following table is constructed to test the second sub-hypothesis ($H_{2.2}$) which assumes a long-run integration between the fluctuations in the TDIR, M/BV ratio, P/E ratio and the inflation along with the liquidity of the Amman Stock Exchange. According to the following table, the liquidity of the ASE is measured by using the value traded.

VEC-rank value traded, M/BV, TDIR, P/E, CPI, JCBL_DUM, trend(Constant) Lags (3) max

Johansen tests for Co-integration

Trend: Constant				No. of Obs. = 57	
Sample: Q4-2000-Q4-2014				Lags= 3	
Maximum					
Rank	**Max Statistics**	**1% Critical**	**H_0**	**Trace Statistics**	**1% Critical**
0	53.66	45.10	R=0	119.77	103.18
1	26.03	38.77	R ≤1	66.11	76.07
2	18.03	32.24	R≤2	40.08	54.46
3	15.97	25.52	R≤3	22.04	35.65
4	5.52	18.63	R≤4	6.06	20.04

5	0.54	6.65	R≤5	0.54	6.65	
6			R≤6			

The findings of the Johansen technique rejected the null hypothesis, meaning that the examined variables are integrated as well as there is a long-run association between the volatility in the TDIR, M/BV ratio, P/E ratio and the inflation along with the liquidity of the Amman Stock Exchange as measured by the value traded. In addition, the findings showed that the liquidity of the Jordanian commercial banks as captured by the dummy is significantly correlated with the market's liquidity on the long-run. Therefore, the vector error correction model is applied in order to identify the nature of the relationships between the TDIR, M/BV ratio, P/E ratio, the inflation and the JCBL_DUM along with the market's liquidity. Results from the VECM test are discussed below:

Table 5.7.9: Vector Error Correction Model "VECM"

The following table is constructed to test the second sub-hypothesis ($H_{3.2}$) which assumes that there is a long-run causality running from the fluctuations in the TDIR, M/BV ratio, P/E ratio and the inflation towards the liquidity of the Amman Stock Exchange. According to the following table, the liquidity of the ASE is measured by using the value traded.

	Coef.	Std. Error	Z	P > /Z/	99% Conf.	Interval
D_ VT						
_Ce1						
L1	0.003	0.014	0.250	0.805	-0.033	0.040

VT						
LD.	0.087	0.143	0.610	0.544	-0.283	0.457
L2D.	0.410	0.155	2.640	0.008	0.009	0.811
TDIR						
LD.	0.057	0.092	0.620	0.533	-0.180	0.295
L2D.	-0.005	0.100	-0.050	0.959	-0.263	0.252
MBV						
LD.	-0.334	0.353	-0.950	0.344	-1.245	0.575
L2D.	0.767	0.388	1.970	0.048	-0.233	1.767
CPI						
LD.	0.589	2.850	0.210	0.836	-6.754	7.932
L2D.	-1.977	2.963	-0.670	0.505	-9.611	5.656
P/E Ratio						
LD.	0.200	0.449	0.450	0.656	-0.958	1.359
L2D.	-0.007	0.411	-0.020	0.985	-1.068	1.052
JCBL_DUM						
LD.	0.016	0.048	0.350	0.728	-0.107	0.141
L2D.	-0.003	0.046	-0.080	0.940	-0.124	0.117
_Cons	0.010	0.013	0.760	0.445	-0.024	0.044

The above table does not validate the results of the Johansen co-integration tests. Therefore, there the findings proved that there is no long-run integration between the volatility in the TDIR, M/BV ratio, P/E ratio or the inflation along with the liquidity of the Amman

Stock Exchange as measured by the value traded. Additionally, the results discovered that the liquidity of the Jordanian commercial banks as measured by the dummy is not linked with the market's liquidity on the long-run. However, to find if the variables are integrated on the short -run or not, the Wald test was applied. Consequently, the results proved that the volatility in the TDIR, M/BV ratio, and the inflation are significantly impacting the decisions of Jordanian investors on the short-run. By contrast, the results revealed a non-significant short-run integration between liquidity of the Jordanian commercial banks as measured by the dummy along with the market's liquidity. However, the study concluded that on the short-run, investors of Jordan behave rationally towards the volatility in market fundamentals like the TDIR, M/BV ratio, and the inflation. Furthermore, investors of Jordan do not rely on the liquidity of banks in order to evaluate the liquidity of the Amman Stock Exchange on the short-run. For results from the Wald, Jarque-Bera and LM tests, see table see table 5.3.7-5.3.9 in appendix G, p.513-515.

Table 5.7.10: The Impact of Market Fundamentals in the Number of Transaction

The following table is constructed to test the second sub-hypothesis ($H_{1:2}$) which assumes that the fluctuations in the TDIR, M/BV ratio, P/E ratio and the inflation are negatively affecting the liquidity of the Amman Stock Exchange. According to the following table, the liquidity of the ASE is measured by using the number of transaction.

Regress D. NOT D.M/BV D.TDIR D. P/E D. CPI D.JCBL_DUM, level(99)

Source	SS	Df	MS	No. of obs= 59
Model	0.0310	5	0.0062	F(5, 53)= 4.28

Residual		0.0768	53	0.0014	Prob > F = 0.0024	
Total		0.1079	58	0.0018	R^2= 0.2878 Adj R^2= 0.2206 Root MSE= 0.0380	
D.NOT	Coef.	Std.Err.	T	P>t	[99% Conf.	Inter-val]
D. M/BV	-0.0909	0.0820	-1.1100	0.2730	-0.3102	0.1282
D. TDIR	-0.0175	0.0278	-0.6300	0.5320	-0.0920	0.0569
D.CPI	-3.9770	0.9050	-4.3900	0.0000	-6.3951	-1.5590
D.P/E Ratio	-0.0200	0.1485	-0.1400	0.8930	-0.4170	0.3768
D. JCBL_DUM	0.0152	0.0179	0.8500	0.3990	-0.0326	0.0631
_cons	0.0165	0.0050	3.2400	0.0020	0.0029	0.0301

Results from the multiple linear regression tests revealed that just 28.78 % variation in the number of transactions is described by the volatility in the independent variables. Therefore, the decisions of Jordanian investors as measured by the market liquidity are insignificantly affected by the fluctuations in market fundamentals like the TDIR, M/BV and the

P/E ratio. More specifically, the results revealed that the fluctuations in the inflation are significantly impacting the decisions of Jordanian investors. In other words, the results proved that the increase in the inflation decreases the number of transaction in the Amman Stock Exchange by -3.9770. Meaning that, there is a negative correlation between the inflation along with the Amman Stock Exchange liquidity as measured by the number of transaction. Additionally, the above table showed a non-significant correlation between the liquidity of Jordanian commercial banks as measured by the dummy along with the liquidity of the ASE as gauged by the NOT. Moreover, the study concluded that increase in the inflation encourages investors of Jordan to invest their financial resources into the banks, while when this variable declines over time; investors of Jordan find it worthwhile diverting their financial resources into the investment in the Amman Stock Exchange instead. However, to check whether the variables of interest are integrated on the long-run or not, results from the Johansen test are discussed below:

Table 5.7.11: Johansen tests for Co-integration

The following table is constructed to test the second sub-hypothesis ($H_{2.2}$) which assumes a long-run integration between the fluctuations in the TDIR, M/BV ratio, P/E ratio and the inflation along with the liquidity of the Amman Stock Exchange. According to the following table, the liquidity of the ASE is measured by using the number of transaction.

VEC-rank transaction, M/BV, TDIR, P/E, Inflation, JCBL_DUM, trend(Constant) Lags (3) max

Johansen tests for Co-integration

Trend: Constant				No. of Obs. = 57	
Sample: Q4-2000-Q4-2014				Lags= 3	
Maximum					
Rank	**Max Statistics**	**1% Critical**	**H_0**	**Trace Statistics**	**1% Critical**
0	54.52	45.10	R=0	133.77	103.18
1	35.99	38.77	R ≤1	76.07	79.24
2	21.62	32.24	R≤2	43.25	54.46
3	14.79	25.52	R≤3	21.63	35.65
4	6.69	18.63	R≤4	6.84	20.04
5	0.14	6.65	R≤5	0.14	6.65
6			R≤6		

After running the Johansen Co-integration test, the results showed that both the trace and max statistics values are more than their critical values. Therefore, the null hypothesis was rejected. In other words, the findings revealed that the study's variables are integrated on the long-run in the first order I (1). Meaning that, the results showed that the volatility in the TDIR, M/BV ratio, P/E ratio and the inflation is significantly associated with the decisions of Jordanian investors as measured by the market's liquidity. Likewise, the findings revealed that the liquidity of banks as captured by the dummy is statistically correlated with the liquidity of the Amman Stock Exchange as measured by the number of transaction. Moreover, since the results from the Johansen test showed that the examined variables are significantly integrated on the long-run, the Vector Error correction model is ap-

plied in order to explain the nature of the relationships between the examined variables. Results from the VECM are illustrated in the following table:

Table 5.7.12: Vector Error Correction Model "VECM"

The following table is constructed to test the second sub-hypothesis ($H_{3.2}$) which assumes that there is a long-run causality running from the fluctuations in the TDIR, M/BV ratio, P/E ratio and the inflation towards the liquidity of the Amman Stock Exchange. According to the following table, the liquidity of the ASE is measured by using the number of transaction.

Vector Error Correction Model						
	Coef.	**Std. Error**	**Z**	**P > /Z/**	**99% Conf.**	**Interval**
D_NOT						
_Ce1						
L1	-0.031	0.008	-3.620	0.000	-0.053	-0.008
NOT						
LD.	0.750	0.157	4.750	0.000	0.343	1.156
L2D.	-0.000	0.145	-0.000	0.997	-0.375	0.373
TDIR						
LD.	0.016	0.017	0.990	0.350	-0.029	0.062
LD2.	0.009	0.016	0.540	0.591	-0.052	0.034
MBV						
LD.	-0.052	0.072	-0.720	0.472	-0.240	0.135

LD2.	-0.027	0.069	-0.400	0.691	-0.152	0.207
CPI						
LD.	2.083	0.621	3.400	0.001	0.505	3.660
L2D.	1.740	0.633	2.750	0.006	-3.371	-0.110
P/E Ratio						
LD.	-0.153	0.083	-1.850	0.065	-0.060	0.368
L2D.	-0.061	0.076	-0.800	0.423	-0.259	0.136
JCBL_DUM						
LD.	-0.005	0.009	-0.540	0.589	-0.030	0.019
L2D.	-0.004	0.008	-0.500	0.618	-0.018	0.027
_Cons	0.000	0.002	0.310	0.753	-0.006	0.007

Since the error term is negative as well as significant, the above table validated the results of the Johansen co-integration test. Therefore, the results confirmed that there is a long-run integration between the volatility in the TDIR, M/BV ratio, P/E ratio and the inflation along with the liquidity of the Amman Stock Exchange as measured by the number of transaction. Likewise, the results showed a long-run causality that is running from the liquidity of banks as measured by the dummy towards the liquidity of the ASE. In other words, the results revealed that investors of Jordan rely on market fundamentals like the TDIR, M/BV ratio, P/E ratio and the inflation in order to evaluate their investment decisions. In other words, the table demonstrated that a 1% decrease in the M/BV ratio encourages investors of Jordan to invest in the ASE by 5.2% in the first lag, while 2.7% in the second lag. On the other hand, the results showed that the fluctuations in the TDIR and

the inflation are positively impacting the decisions of Jordanian investors as measured by the market's liquidity.

Additionally, the results showed that the liquidity of the Jordanian commercial banks as measured by the dummy is negatively impacting the liquidity of the ASE on the long-run. Meaning that, the increase in the liquidity of banks leads to decrease the market liquidity by 0.05% in the first lag, and 0.04% in the second lag. Moreover, the study concluded that investors of Jordan rely on market fundamentals like the TDIR, M/BV ratio, P/E ratio and the inflation in order to evaluate their investment decisions. Additionally, they are relying on the liquidity of banks in order to evaluate the liquidity of the Amman Stock Exchange. Furthermore, results from the Wald test showed a significant short-run correlation between the volatility in the TDIR, M/BV and the inflation along with the liquidity of the ASE as measured by the NOT. See table 5.3.10-5.3.12 in appendix G, p. 515-517, for the results of the Wald, Jarque-Bera and the LM tests.

5.8 Results' Summary

5.8.1 Regression Results

The current research applies the multiple linear regression tests in order to assess the impact of the volatility in market fundamentals like the TDIR, M/BV ratio, P/E ratio and the inflation in the decisions of Jordanian investors. In this research, investors' decisions are mainly captured by using the liquidity of the Jordanian commercial banks and the Amman Stock Exchange. In addition, the study tries to find the relationship between the liquidity of banks along with the liquidity of the Amman Stock Exchange. Consequently, the re-

sults showed that the volatility in the TDIR, M/BV and P/E ratio does not impact the liquidity of banks as measured by the total loans/ total deposits, liquid assets/total assets, liquid assets/ total deposits, and the total deposits/total assets ratio. Similarly, the results revealed there is no correlation between the liquidity of the ASE as measured by the dummy along with banks' liquidity as measured by the TDTA, TLTD, LATA and the LATD ratios. Furthermore, the results also showed that the volatility in the TDIR, M/BV ratio and the P/E ratio does not impact the liquidity of the ASE as gauged by the TOR, TV, VT and the NOT. However, the regression results showed that the fluctuations in the inflation are significantly impacting the liquidity of the Amman Stock Exchange as measured by the TOR, TV as well as the NOT. Furthermore, the findings discovered that there is no significant correlation between the liquidly of the Jordanian commercial banks as measured by the dummy along with the liquidity of the Amman Stock Exchange. Moreover the regression results proved that the assumption of the conventional economic theory is not applied by the Jordanian investors. In other words, since the results showed that the fluctuations in interest rates do not affect the liquidity of banks and the stock markets, the assumption of the conventional economic theory is not followed by investors of developing economies. Moreover, the current research concluded that investors of Jordan do not use variables like the TDIR, M/BV, P/E ratio and the inflation to evaluate their investment decisions, or maybe they are irrational investors as they enter the market without a previous preparation.

However, since the regression results showed that there is no significant correlation between the examined variables, the regression's tables showed that the R^2 is very low, the P-Values and the standard error are high as well. These results are consistent with some of

the previous studies, which showed a very low R^2 and high standard errors and P-Values. For example, Enyioko (2012) applied the regression test to assess the impact of interest rates on banks performance. Consequently, the results found that the value of R^2 is 0.045, while the standard error is 5.77. Therefore, the study found a non-significant correlation between the interest rates and the performance of banks. Researchers like Kemboi and Tarus (2012) found a non-significant correlation between the changes in interest rates along with the development of the Nairobi stock market. Their results showed that the standard error is high (0.77). Alper and Anbar (2011) showed a high standard error and a low R^2 when they measured the impact of interest rates in the profitability of Turkish commercial banks. Ali (2016) studied the impact of the M/BV ratio in the liquidity of the ASE, and his results showed that the standard error and the P-value are high. Furthermore, Vodova (2011a) found a non-significant relationship between the liquidity of banks along with the interest rate. The regression results showed that the value of R^2 is very low, while the standard error and the P-Value are found to be high. In addition, studies including Vodova (2011b, 2013); Al-Ali and Kassem (2013); Malik and Rafique (2013) found that the R^2 is relatively high. Beyond that, studies like Yamin and Ali (2014); Shaban and Al-Zubi (2014) appraised the ability of the M/BV and the P/E ratios to rationalise investors' decisions. See table 5.1.4 in appendix F, p. 492, for the previous studies which showed high or low R^2, standard error and P-values.

Furthermore, According to Idre (2017) empirical techniques like the regression models are considered to be highly sensitive to the observations, which do not follow the pattern of other observations. However, that maybe will affect the validity of the regression's results since the regression models are highly sensitive to outliers. Moreover, since some of the

regression's results of this research showed high standard errors values, it is necessary to apply the methods of the robust regression, in order to make sure that the standard errors in our models are really high. After running the robust standard error tests, the results showed that the standard error for the liquidity of the Jordanian commercial banks and the market's liquidity are to some extent similar to the results, which we got before running these robustness tests. Therefore, the study concluded that some of the standard error values of our regression models are really high. The reason behind that relates to the nature of data, which are used in order to accomplish the core aim of this research. In other words, since the current research used secondary data to assess the impacts of market fundamentals in the decisions of the Jordanian investors, the data are value free, therefore, the researcher has no authority on the employed data. In this regard, Livesey (2014) mentioned according to the positivism paradigm, when the researcher use secondary data, that's mean the data must be collected externally. Meaning that the data are considered to be value free data and the researcher has no authority to affect the data's nature. Furthermore, the results also proved that the values of the R-squared are relatively low; therefore, the results confirmed that there is no significant correlation between the fluctuations in market fundamentals along with the decisions of Jordanian investors as measured by the liquidity of banks and the ASE. See tables 5.1.5-5.1.6 in appendix F, p. 495-497, for the results of the robustness regression tests.

5.8.2 Co-integration, VAR and Granger Causality Results

Through employing techniques like the Johansen Co-integration test, VAR and Granger Causality tests, the results confirmed that there are no long or short run causalities running

from the TDIR, M/BV ratio, P/E ratio, inflation or the market's liquidity towards the liquidity of the Jordanian commercial banks as measured by the TLTD ratio. Moreover, the study concluded that investors of Jordan behave irrationally towards the fluctuations in market fundamentals as well as they do not rely on the liquidity of the ASE in order to evaluate the liquidity of the Jordanian commercial banks.

5.8.3 Co-integration and VECM Results

After running the Johansen co-integration tests, the results showed that the volatility in market fundamentals like the TDIR, M/BV, P/E and the CPI are significantly integrated with the liquidity of banks on the long-run. Similarly, there is a long run integration between the liquidity of the ASE as captured by the dummy along with the liquidity of banks as measured by the LATA, LATD and the TDTA ratios. In order to make sure that the long-run causality is really running from the fluctuations in market fundamentals towards the liquidity of banks as gauged by the liquid assets to total assets and the total deposits to total assets ratios, the VECM was applied. Consequently, the results of ECM confirmed that there are long-run associations between the TDIR, M/BV, P/E and the CPI along with the liquidity of banks as measured by the LATA and the TDTA ratios. Additionally, the results also validated the long-run causality that is running from the market's liquidity as measured by the dummy towards the liquidity of banks as measured by the LATA and TDTA ratios.

Furthermore, the study employed the technique of Wald test (χ^2) in order to examine whether the TDIR, M/BV ratio, P/E ratio, the inflation or the dummy cause a granger to

the liquidity of banks in the short-run. Consequently, the findings discovered that there is a short-run causality running from the volatility in the TDIR, M/BV ratio and the P/E ratio towards the liquidity of banks as measured by the LATA and the TDTA ratio. The findings also revealed a short-run causality that is running from the volatility in the TDIR and the M/BV ratio towards the liquidity of banks as measured by the LATD ratio. However, the results documented a non-significant short-run correlation between the liquidity of the ASE as measured by the dummy along with the liquidity of banks as captured by the LATA and the TDTA ratios. Moreover the study concluded that in the short-run investors of Jordan behave rationally towards the fluctuations in the TDIR, M/BV ratio and the P/E as well as they are employing these fundamental variables in the process of decision making.

Regarding the market's liquidity, the results from the Johansen co-integration test showed that the volatility in market fundamentals like the TDIR, M/BV, P/E and the CPI are significantly integrated with the liquidity of the Amman Stock Exchange on the long-run. Likewise, there is long run integration between the liquidity of banks as captured by the dummy along with the decisions of Jordanian investors as gauged by the market's liquidity. However, to make sure that the long-run causality is really existed between the fluctuations in market fundamentals and the decisions of investors as measured by the market' liquidity, the VECM was applied. Consequently, results from the error correction model revealed that there are long-run causalities running from the fluctuations in the TDIR, M/BV, P/E and the CPI towards the market's liquidity as measured by the turnover ratio and the number of transaction. In addition, the results validated the long-run correlation that is existed between the liquidity of banks as measured by the dummy along with the

market's liquidity as gauged by the TOR and the NOT. Furthermore, the results showed that when the ratios of M/BV ratio and the P/E decline over time, investors of Jordan find it worthwhile diverting their financial resources to the ASE rather than keeping them into the banks. By contrast, the increase in these ratios encourages investors of Jordan to employ their financial resources into the banks instead of diverting them to the Amman Stock Exchange. Moreover, the study concluded that investors of Jordan rely on the liquidity of banks in order to evaluate the market's liquidity as measured by the TOR and the NOT.

After running the Wald test (χ^2) in order to examine the short-run correlation between the fluctuations in market fundamentals along with the market's liquidity, the results proved that the volatility in the TDIR, M/BV ratio, P/E ratio and the inflation are significantly impacting the decisions of Jordanian investors on the short-run as measured by the TOR, TV and the VT. However, the results also showed a short-run correlation between the fluctuations in market fundamentals like the TDIR, M/BV and the CPI along with the ASE's liquidity as measured by the NOT. By contrast, the results showed a non-significant short-run correlation between the liquidity of banks as captured by the dummy along with the market's liquidity as gauged by the TOR, VT and the NOT. The findings also showed that the liquidity of banks is significantly impacting the trading volume on the short-run. Moreover, the study concluded that investors of Jordan use market fundamentals like the TDIR, M/BV ratio, P/E ratio and the inflation in the process of decision making, as well as they are relying on the liquidity of banks in order to evaluate the number of the traded shares in the Amman Stock Exchange.

However, according to Musmar and Hudairi (2013), the Arab Bank is considered as one of the largest financial institution in the Middle East and it contributes in the market capitalisation of the ASE by 28%. Thus, since this bank has the highest market capitalisation in the ASE, this may be affected the results of the ADF, regression, Johansen co-integration, VECM, Wald, and the robustness tests, which are applied in order to assess the impact of the fluctuation in market fundamentals in the decisions of Jordanian investors as measured by the liquidity of the Jordanian commercial banks. Moreover, to be sure that the contribution of the Arab bank has not affected the results of this research, the current study dropped the Arab bank from the sample of the Jordanian commercial banks and the tests have been applied once again. Consequently, the results revealed that there is no relationship between the liquidity of banks along with the fluctuations in market fundamentals. However, since the results of the ADF tests showed that we are dealing with a non-stationary time series data, the current research applied the Johansen co-integration tests in order to make sure that we have not lost any long-run correlation that is may be existed between the examined variables. Consequently, the results showed that there is a long-run causality running from the fluctuations in the TDIR, M/BV, P/E and the inflation along with the liquidity of banks. Similarly, the results showed a long-run correlation between the liquidity of the ASE as captured by the dummy along with banks' liquidity as measured by the LATA and the TDTA ratios. Furthermore, results from the Wald tests showed a short-run correlation between the liquidity of banks and the fluctuations in market fundamentals. To some extent the above results are similar to the results, which have been achieved before dropping the Arab Bank. The reason behind achieving the same results is that we are not looking for the relationship between the liquidity of the Jordanian commercial banks along with the capitalisation of the ASE. For the results of the ADF, regres-

sion, Johansen, VECM, Wald and the robustness tests, see tables 5.8.1-5.9.13 in appendix I, p. 540-568.

5.9 ANOVA Analysis Test

Since the review of literature asserted that the economy of Jordan such as other developing economies in the region was impacted by the 2007/8 financial crisis, the two way-Anova analysis test was performed in order to examine the following hypothesis:

H_4: There are no significant differences between the behaviours of Jordanian investors, before, during or after the 2007/8 financial crisis, due to the impacts of the fluctuations in market fundamentals like the TDIR, M/BV ratio, P/E ratio and the inflation. This hypothesis is divided into two sub-hypotheses:

$H_{4.1}$: There are no significant differences between the liquidity of the Jordanian commercial banks, before, during or after the 2007/8 financial crisis, due to the impacts of the fluctuations in the TDIR, M/BV ratio, P/E ratio and the inflation.

$H_{4.2}$: There are no significant differences between the liquidity of the ASE, before, during or after the 2007/8 financial crisis, due to the impacts of the fluctuations in the TDIR, M/BV ratio, P/E ratio and the inflation.

Table 5.9.1: The Effect of the Global Financial Crisis in the Liquidity of Banks

The following table illustrates the impact of the fluctuations in the TDIR, M/BV, P/E and the inflation in the liquidity of banks before, during and after the crisis period. In other words, this table tests the first sub-hypothesis ($H_{.4.1}$) which assumes that there are no sig-

nificant differences between the liquidity of banks, before, during or after the 2007/8 financial crisis, due to the impacts of the fluctuations in the TDIR, M/BV ratio, P/E ratio and the inflation.

Anova Test					
Period	**Banks' Liquidity**	**TDIR**	**M/BV**	**P/E**	**CPI**
		Probability > F			
Pre-Crisis Q1/2000-Q4/2007	**LATA**	**0.003**	**0.427**	**0.661**	**0.163**
	LATD	**0.000**	**0.435**	**0.881**	**0.679**
	TLTD	**0.662**	**0.016**	**0.011**	**0.002**
	TDTA	**0.003**	**0.427**	**0.661**	**0.163**
Period	**Banks' Liquidity**	**TDIR**	**M/BV**	**P/E**	**CPI**
During the Crisis Q1/2008-Q4/2011	**LATA**	**0.101**	**0.004**	**0.121**	**0.316**
	LATD	**0.569**	**0.064**	**0.311**	**0.242**
	TLTD	**0.190**	**0.653**	**0.223**	**0.181**
	TDTA	**0.101**	**0.004**	**0.121**	**0.316**
Period	**Banks' Liquidity**	**TDIR**	**M/BV**	**P/E**	**CPI**
Post-Crisis Q1/2012-Q4/2014	**LATA**	**0.200**	**0.020**	**0.001**	**0.002**
	LATD	**0.284**	**0.231**	**0.001**	**0.037**
	TLTD	**0.333**	**0.356**	**0.001**	**0.043**
	TDTA	**0.200**	**0.020**	**0.001**	**0.002**

This research applies the two-way Anova analysis test in order to explain the behaviour of Jordanian investors towards the impacts of the 2007/8 financial crisis. For this purpose,

the study assumed that there are no significant differences between the decisions of Jordanian investors, before, during or after the recent financial crisis due to the impacts of the fluctuations in the TDIR, P/E ratio, inflation and the M/BV ratio. Consequently, results from the Anova test showed that the impact of the TDIR and M/BV ratio in investors' behaviour as measured by LATA and TDTA is found to be different before and during the financial crisis. In other words, the results confirmed that the recent crisis has impacted the behaviour of Jordanian investors as captured by the liquidity of banks, as measured by LATA and TDTA. On the other hand, the results revealed that in the pre-crisis and the crisis period, the volatility in the P/E ratio and the inflation was exerting the same impacts in the behaviours of Jordanian investors. However, after the crisis period, the fluctuations in the P/E ratio and the inflation started to play a different role in the behaviour of Jordanian investors. In other words, the results confirmed that the decisions of Jordanian investors as measured by banks' liquidity have not impacted by the latest financial crisis, due to the volatility in the P/E ratio and the inflation. Moreover, the study found that the recent crisis has affected the liquidity of banks as measured by the liquid assets to total assets and the total deposits to total assets ratios, due to the volatility in the TDIR and the M/BV ratio. By contrast, the results showed that the recent crisis was not impacted the behaviour of Jordanian investors, due to the stable impact of the P/E ratio and the inflation.

The results also revealed that volatility in the TDIR was impacted the behaviour of Jordanian investors as captured by the liquid assets to total deposits ratio. However, since the pre-crisis and the crisis period showed that the fluctuations in the M/BV ratio, P/E ratio and the inflation were exerting the same impact in the behaviour of Jordanian investors, the results showed that the 2007/8 financial crisis have not impacted the liquidity of banks

as measured by the LATD and the TLTD ratios. The findings also showed that the liquidity of banks as measured by the TLTD ratio was not impacted by the latest financial crisis due to the stable impact of the TDIR.

Table 5.9.2: The Effect of the Global Financial Crisis in the Liquidity of ASE

The following table illustrates the impact of the fluctuations in the TDIR, M/BV, P/E and the inflation in the liquidity of the Amman Stock Exchange, before, during and after the financial crisis. In other words, this table tests the second sub-hypothesis ($H._{4.2}$) which assumes that there are no significant differences between the liquidity of the ASE, before, during or after the 2007/8 financial crisis, due to the impacts of the fluctuations in the TDIR, M/BV ratio, P/E ratio and the inflation.

Anova Test					
Period	**Amman Stock Exchange's Liquidity**	**TDIR**	**M/BV**	**P/E**	**CPI**
		Probability > F			
Pre-Crisis Q1/2000-Q4/2007	**TOR**	**0.047**	**0.000**	**0.000**	**0.000**
	VT	**0.045**	**0.169**	**0.001**	**0.000**
	TV	**0.071**	**0.004**	**0.003**	**0.000**
	NOT	**0.003**	**0.002**	**0.001**	**0.000**
Period	**Amman Stock Exchange's Liquidity**	**TDIR**	**M/BV**	**P/E**	**CPI**

During the Crisis Q1/2008-Q4/2011	**TOR**	**0.048**	**0.010**	**0.128**	**0.007**
	VT	**0.108**	**0.014**	**0.522**	**0.000**
	TV	**0.144**	**0.012**	**0.137**	**0.563**
	NOT	**0.269**	**0.005**	**0.245**	**0.000**
Period	**Amman Stock Exchange's Liquidity**	**TDIR**	**M/BV**	**P/E**	**CPI**
Post-Crisis Q1/2012-Q4/2014	**TOR**	**0.571**	**0.000**	**0.000**	**0.000**
	VT	**0.656**	**0.000**	**0.007**	**0.000**
	TV	**0.593**	**0.000**	**0.000**	**0.000**
	NOT	**0.522**	**0.000**	**0.000**	**0.000**

The findings revealed that the behaviour of Jordanian investors as measured by the TOR have not impacted by the 2007/8 financial crisis, due to the stable impacts of the fluctuations in the TDIR, the M/BV ratio and the inflation. However, the results showed that the liquidity of the ASE as measured by the TOR, VT and the TV was affected by the financial crisis, due to the different impacts of the fluctuations in the P/E ratio. Additionally, the behaviour of Jordanian investors as measured by the trading volume was impacted by the 2007/8 financial crisis, due to the fluctuations in the inflation. By contrast, the liquidity of the ASE as measured by the VT was not impacted by the financial crisis, due to the stable impact of the inflation. The results revealed that before and during the crisis period, there were no differences between the behaviour of Jordanian investors as measured by NOT due to stable impacts of the fluctuations in the M/BV ratio and the inflation. On the other hand, the results proved that the financial crisis has affected the liquidity of the ASE

as measured by the number of transaction, due to the fluctuations in the TDIR and the P/E ratio.

5.10 ANOVA Results' Summary

The study used the two-way Anova analysis test in order to explain the behaviour of Jordanian investors towards the impacts of the 2007/8 financial crisis. In this research, investors' behaviour was captured by using the liquidity of the Jordanian commercial banks and the ASE. Thus, to measure the crisis's impacts, the study assumes that pre; during or after the financial crisis there are no statistical differences between the behaviour of Jordanian investors, due to impacts of the fluctuations in the TDIR, M/BV ratio, P/E ratio and the inflation. For this purpose, the study period was split into three stages. The pre-crisis period and it spans from Q1/2000-Q4/2007, the crisis period extends from Q1/2008- Q4/2011 and the post crisis period and it spans from the Q1/2012 towards the Q4/2014. Consequently, the results showed that the 2007/8 financial crisis was impacted the liquidity of the Jordanian commercial banks as measured by the LATA and the TDTA, due to the different impacts of the fluctuations in the TDIR and the M/BV ratio. The results also revealed that the liquidity of banks as measured by the LATD ratio was impacted by the 2007/8 financial crisis, due to the impacts of the fluctuations in the TDIR.

Regarding the liquidity of the Amman Stock Exchange, the findings revealed that the behaviour of Jordanian investors as measured by the TOR have not impacted by the 2007/8 financial crisis, due to the stable impacts of the fluctuations in the TDIR, the M/BV ratio and the inflation. However, the results showed that the liquidity of the ASE as measured

by the TOR, VT and the TV was affected by the financial crisis, due to the different impacts of the fluctuations in the P/E ratio. Additionally, the behaviour of Jordanian investors as measured by the trading volume was impacted by the 2007/8 financial crisis, due to the fluctuations in the inflation. However, the findings proved that before and during the crisis period, there were no differences between the behaviour of Jordanian investors as measured by NOT, due to stable impacts of the fluctuations in the M/BV ratio and the inflation. By contrast, the results proved that the financial crisis was affected the liquidity of ASE as measured by the number of transaction, due to the fluctuations in the TDIR and the P/E ratio. Though, the findings confirmed that the recent crisis did have an impact on the decisions of Jordanian investors, however, the study concluded the 2007/8 crisis had a slight impact in the behaviour of Jordanian investors as measured by the liquidity of the Jordanian commercial banks and the ASE.

5.11 Chapter Summary

This chapter is constructed to test the study's hypotheses, which are formulated to assess the impact of market fundamentals and the 2007/8 financial crisis in the decisions of Jordanian investors. However, though the study has limited observations, which are 60 for each variable, the study was able to accept some hypotheses as well as exploring the role of market fundamentals in the process of decision making. However, though the sample size seems to be limited, the number of observation for time series data is considered to be adequate since it is over than 50 (Anonymous, n.d.). Authors like Box and Jenkins (cited in NCSS, 2016) recommend a minimum of 50 observations for time series analysis. Accordingly and since previous researchers including Ali (2016); Zafar (2013); Al-Mukit

(2012); Samuel and Ihejirika (2014); Landskroner, Ruthenberg and Pearl (2006) use a time series sample between 11 and 60 per variable, the number of observations of this research is considered to be adequate and the results can be generalized. Beyond that since this research such as previous studies used similar measures to capture the liquidity of banks and the stock market, the measures of this research are suggested to be valid (e.g. Ali, 2016; Vodova, 2011a, 2013; Alper and Anbar, 2011; Amador, et al., 2013; Chordia, et al., 2010; Wong and Fung, 2002). Furthermore, in quantitative studies of the same nature, the models can be estimated only if the number of observations is more than the number of parameters (Array, 2014). For instance, the number of observations for quantitative research must use the 20:1 rule. Meaning that, the ratio of the sample size is relative to the number of parameters predictors *"in a regression model should be at least 20 to 1*". For instance if there are 3 parameters then the formula will be such as addressed below:

N= ((3+1)-1) * 20= 60 observations are required in the study. However, since this research has 5 parameters for each model, the sample size of this research is considered to be sufficient. For more information see an alternative method that is suggested by Green (1991) in order to identify the appropriate sample size for regression and quantitative studies (Burmeister, n.d.). In appendix H, p. 518-534, see tables from 5.4.1 to 5.7.2 for the results of the tested hypotheses.

However, since the sample of this study is sufficient and the results can be generalised, the empirical tests, which are used in this research are crucial and important to elaborate the impacts of market fundamentals and the 2007/8 financial crisis in the decisions of Jordanian investors. Therefore, the current study is expected to contribute in developing the existing literature that is focused on investor decisions and investment behaviour. In addi-

tion, the study will provide researchers, academicians, investors and decision makers with important information regarding the fundamental relationship of the time deposit interest rates, M/BV ratio, P/E ratio as well as the inflation along with the liquidity of banks, and financial markets. The study will also help investors, financial advisors and decision makers to rationalise their decisions, during both the tranquil and the unstable financial periods. However, to make it easier for the interested groups to benefit from this research, the coming chapter is organised to summarise the study's background as well as research's structure, conclusion, recommendations, and eventually the study's final remarks.

Chapter Six: Conclusion and Recommendations

6.1 Introduction

The economy of Jordan heavily relies on the performance of banks and the Amman Stock Exchange. For instance, the banking sector contributed in the GDP by 7.2% in 2009, compared with 2.8% and 6.6% in 1999 and 2007, consecutively. On the other hand, the market capitalisation of the ASE represented 150% in 2009, 289% and 75% by the end of 2007 and 1999, respectively (ASE, 2014).

However, due to the impacts of the deregulation, political instability and the set of the global financial crises, the last decades showed that the economy of Jordan fluctuated dramatically. For instance, due to the Arab spring crisis the country GDP jumped down by -3.3% in 2011 towards 2012. The tourism arrivals grew negatively by -22% in 2010-11. The foreign investment's inflow plunged by -11% in 2011. The foreign currency' reserves plunged by 46%, during the period 2010-2012, as well as the unemployment rates increased from 12.5% to 12.6% (DOS, 2014; CBJ, 2015; Masetti, et al., 2013; Pinner and Symons, 2012). Moreover, since this unstable economic environment sharpened the movements in market fundamentals like the TDIR, M/BV ratio, P/E ratio and the inflation that may be negatively impacted the perceptions of Jordanian investors. However, though considerable studies like (Ali, 2016; Al-Ali and Kassem 2013; Ojeaga and Odejimi, 2014; Yamin and Ali, 2014; Al-Deehani, 2005; Vodova, 2013; Vodova, 2011a; Shaban and Al-Zubi; Jongwanich, 2010) have examined the importance of interest rates, inflation, M/BV ratio and the P/E ratio to the process of decision making and saving behaviour, there is no

previous study answered the impact of the fluctuations in the TDIR, M/BV ratio, P/E ratio and the inflation in the perception of the Jordanian investors, as measured by the liquidity of banks and the Amman Stock Exchange. Additionally, since the economy of Jordan such as other developing economies in the region was adversely impacted by the 2007/8 financial crisis, this research also aims at explaining the behaviour of Jordanian investors towards the impacts of the 2007/8 financial crisis.

In this research investors' decisions are mainly captured by utilising both the liquidity of Jordanian commercial banks and the Amman Stock Exchange. Precisely, the indicator of banks' liquidity is typically measured by using four ratios including the TDTA, TLTD, LATA and the LATD ratio. Nevertheless, the indicator of market's liquidity is gauged by using four measures of trading activity. These measures are including the TOR, TV, VT and the NOT. The data of the examined variables are time series data drawn from a population encompasses all the Jordanian listed banks and the ASE, over the period Q1/2000-Q4/2014. However, since the listed Jordanian Islamic banks do not meet the requirements of this research, two Islamic banks have been excluded from the study's sample. The reason behind excluding the Islamic banks from the sample of this research is that these banks do not include the deposit interest rates in their banking operations. Therefore, the study's sample encompasses all the listed Jordanian commercial banks as well as the ASE.

6.2 Research Structure

For the purpose of this research, six chapters are constructed. The first chapter introduces the research background and the problem's origin and main inquiries. Thereafter, the

chapter continued to present the study's motivation, rational, aims and objectives, as well as the main contribution to the existed knowledge, and finally the study's limitations. The second chapter elaborates the economy of Jordan, including the monetary policy and the development of the Jordanian financial system. The chapter also discussed the structure of the Jordanian financial market and the development of the ASE. Thereafter, the chapter discussed the top-down and bottom up investment strategies, and finally, the potential determinants of the Jordanian investors' decisions.

However, to create a robust theoretical and empirical framework; the third chapter presents a critical appraisal for the fundamental relationships of macroeconomic variables along with the performance of banks and stock markets. Consequently, the appraisal confirmed a positive relationship between interest rates and banks' performance (e.g. Okoye and Eze, 2013; Al-Ali and Kassem, 2013; Vodova, 2011a; Vodova, 2011b; Vodova, 2013; Wong and Fung, 2002). According to Thang (2009) when the rate of interest is high, investors prefer to liquidate their securities in order to deposit them into the banks. On the other hand, the lower interest rates encourage investors to divert their financial resources into investment in stock markets instead. However, studies including Samuel and Ihejirika (2014) argued that there is a negative correlation between interest rates and the profitability of banks. By contrast, Vodova (2011a; 2013); Alper and Anbar (2011) found a non-significant correlation between the liquidity of banks along with the rate of inflation. Similarly, studies including Adekunie and Ojodu (2012) found that the rate of inflation is insignificantly related to the growth of the Nigerian stock market. Furthermore, Through focusing on explaining the nature of the relationship between interest rates and the stock markets' performance, the review of literature showed that the change in interest rates is

associated either positively or adversely with the markets' performance (i.e. Khan, et al., 2012; Ali, 2014; Aurangzeb, 2012; Uddin and Alam, 2007; Al-Majali and Al-Assaf, 2014; Al-Zu'bi, 2000; Chordia, Roll and Subrahmanyam 2010; Amador, et al., 2013; Khrawish, et al., 2010).

After that the chapter proceeds to discuss the potential determinants of investors' decisions and saving behaviour. Generally speaking, a majority of the available studies revealed that investment decisions, and saving behaviours are significantly affected by variables like the interest rates, economic growth, and the rate of inflation. in addition, the appraisal argued that financial variables like the M/BV ratio, P/E, earning per share, profit dividend or demographic factors such as age, experience of using the internet and many other factors, are significantly impacting the process of making investment decisions (i.e. Kaleem, Wajid, and Hussain, 2009; Fares and Khamis, 2011;Shafi, 2014; Shaban and Al-Zubi, 2014; Mojgan and Ali, 2011; Azam and Kumar, 2011; Shanmugasundaram and Jansirani, 2012; 2012; Gunathilaka, 2014; Obamuyi, 2013; Ozcan, Gunay and Ertac, 2003; Kaberuka and Namubiru, 2014; Ojeaga and Odejimi, 2014;Jongwanich, 2010; Yamin and Ali, 2014). However, researchers including Ali (2016) argued that there is no significant correlation between M/BV ratio and the stock market's liquidity.

Finally, the chapter tends to discuss the impacts of the 2007/8 financial crisis in the MENA's region economies in general, but on the economy of Jordan particularly. Consequently, the discussion showed that the magnitude of the crisis impacts is mainly based on the openness and integration of the MENA's region economies with the global economy or with developed financial markets like the US and the EU (e.g. Ahid and Augustine,

2012; Abu-Aliqah and Al-Rfou, 2010; Alnajjar, et al., 2010; Al-Zyadat and Al-Kharabsheh, 2013; Neaime, 2012; Mashal, 2012; Al-Nessor, 2008; AL-Rjoub, 2011;Nour and Sharabati, 2014).

Furthermore, the critical appraisal in the third chapter showed a gap regarding the impacts of market fundamentals in the decisions of Jordanian investors, as captured by the liquidity of banks and the stock market. Additionally, the review of the previous studies showed a gap regarding the effects of the 2007/8 financial crisis in the behaviour of Jordanian investors. Thus, to fill these gaps in literature, the current research is initiated to assess the impact of the fluctuations in the TDIR, M/BV ratio, P/E ratio and the inflation in the decisions of Jordanian investors, including the impacts of the 2007/8 financial crisis. Consequently, the results of this research are expected to enhance the available framework, which is focused on the determinants of banks and markets' liquidity. The study will also help investors to allocate their financial resources efficiently in the financial institutions of Jordan.

In the fourth chapter, I described the available and the suggested framework, which is developed in order to answer the impact of market fundamentals in the decisions of Jordanian investors. Thus, to answer the impact of market fundamentals in investors' decisions, the study formulated four main hypotheses. The first Hypothesis assumed that the fluctuations in the TDIR, M/BV, P/E ratio and the inflation are significantly affecting the decisions of Jordanian investors. The second hypothesis assumed a long-run integration between market fundamentals along with the decisions of Jordanian investors. The third hypothesis postulated a significant long and short-run causality that is running from the vola-

tility in the TDIR, M/BV, P/E ratio and the inflation towards the decisions of Jordanian investors. However, in order to measure the impacts of the 2007/8 financial crisis in investors' decisions, the fourth hypothesis suggested that there are no significant differences between investors' decisions, before, during or after the financial crisis, due to the effects of the fluctuations in the TDIR, M/BV ratio, P/E ratio and the inflation. Thereafter, the chapter continued to introduce the main philosophical assumptions in order to choose the most suitable method to test the study's hypotheses. Thus, by discussing different philosophical assumptions like the ontology and the epistemology; the study selected the quantitative approach 'deductivism-positivism approach' in order to accomplish the core aim of this research. In this context, Bryman and Bell (2011, p. 26-27) mentioned that when a study use the available literature to deduce hypotheses those can be linked with equation concepts; these hypotheses must be subjected to the empirical analysis "Quantitative". Therefore, since the current research relies on the available studies in order to deduce hypotheses those can be linked with equation concepts; the quantitative approach was employed in order to analyse the study's data and hypotheses. The data of this research are secondary data drawn from the published bulletins of the ASE, DOS, CBJ and banks of Jordan, over the period Q1/2000-Q4/2014.

More specifically, the data which relates to the liquidity of the ASE and the average ratios of the ASE's M/BV and P/E are quarterly data obtained from the published bulletins of the Amman Stock Exchange. However, to measure the liquidity of banks, the study compiled quarterly observations from the financial reports, which are published on the official sites of the ASE, CBJ and the Jordanian commercial banks. The data of the time deposit interest rates are quarterly data obtained from the official site of the CBJ. The data which

relates to inflation are quarterly data compiled from the department of statistics. Thus, to analyse these data, the study used the STATA software in order to run the descriptive test, two-way Anova, ADF test, regression, Johansen Co-integration test, VAR, VECM, Wald test, and the Granger Causality test. Consequently, in chapter five the study focuses on presenting the overall results, which are achieved by these empirical techniques. Finally, the sixth chapter presents the study's conclusions, recommendations and final remarks.

6.3 Conclusion

This research aims at assessing the impact of the fluctuations in market fundamentals like the TDIR, M/BV ratio, P/E ratio and the inflation in the decisions of Jordanian investors. For this purpose, the study employed a set of advanced empirical techniques. More specifically, the study applied the descriptive analysis test in order to describe the data's means, variances, standard deviations, kurtosis and skewness. As a result, the study found that except for MBV, TDTA, LATA, LATD, TLTD, and the dummy, the standard deviations of other variables are found to be very high. The findings also revealed that the distribution of the MBV, value traded, is moderately skewed to the right. However, variables including the LATD are negatively skewed to the left "heavier left tail". However, variables like the TLTD and the P/E ratio are highly skewed to the right, while; the dummy variable is highly skewed to the left. The results also revealed that the distribution of the TDTA, CPI, TOR, TDIR, LATA, trading volume and the NOT are approximately symmetric. On the other hand, the kurtosis results signified that since the data of turnover ratio, M/BV ratio, TDIR, CPI, VT, TV, NOT and the dummy are less than three, the data seem to have flatness and they are lighter-than-normal tails. Additionally, since the kurtosis values of

the P/E ratio, TDTA, TLTD, LATA, and the LATD ratios are more than three; the variables are found to be sharply peaked and having heavier-than-normal tails. However, after running this test all the data have been converted into the logarithm form in order to ensure that I am dealing with a homoscedasticity data.

However, since the current research employed time series data in order to accomplish the core aim and objectives, it was necessary to employ the ADF test in order to check for data stationarity and to avoid the problem of getting spurious regression results. However, after running the ADF test at level, the results failed to reject the null hypothesis, which assumes that the study time series is not stationary. Nevertheless, after adding the first difference, all the variables succeeded in replacing the null hypothesis by the alternative one. In other words, the study time series are found to have unit root when it was tested at level. However, after adding the first difference all the variables became stationary. Therefore, the series data are found to be integrated of order one I (1). Anyway, since the results of the ADF test showed that we are dealing with a non-stationary variables, the study moved on to apply the multiple linear regression technique through including the difference operator in the models to avoid the problem of getting spurious regression results. Consequently, the results revealed that the volatility in the TDIR and inflation does not impact the liquidity of the Jordanian banks, as measured by the total loans/ total deposits, liquid assets/total assets, liquid assets/ total deposits and total deposits/total assets. Similarly, the fluctuations in the M/BV and the P/E ratios are insignificantly impacting the decisions of Jordanian investors, as measured by the liquidity of banks. Similarly, researchers like Vodova (2011a); Alper and Anbar (2011) found a non-significant correlation between the interest rate and the inflation along with the liquidity of banks. Additionally,

results from the regression tests showed that there is no statistical correlation between the liquidity of the ASE as measured by the dummy, along with the liquidity of banks as measured by the TDTA, TLTD, LATA and the LATD ratios. Furthermore, the regression results also revealed that the volatility in market fundamentals like the TDIR, M/BV and the P/E ratio is insignificantly impacting the liquidity of ASE as measured by the turnover ratio, trading volume, value traded and the number of transaction. However, the volatility in the inflation is found to be negatively impacting the liquidity of the ASE as measured by the TOR, TV and the NOT. A study by Aurangzed (2012) confirmed that the inflation rate is negatively affecting the performance of the south Asian stock markets. By contrast, Richard, Adekunie and Ojodu (2012) revealed that the rate of inflation is insignificantly related to the growth of the Nigerian stock market.

However, since I applied the regression test through using the difference operator, it was necessary to run the Johansen co-integration test in order to check if there is a long-run integration between the examined variables. Consequently, the findings proved that the volatility in market fundamentals like the TDIR, M/BV, P/E and the inflation is significantly integrated with the liquidity of banks on the long-run. Similarly, there is long run integration between the liquidity of the ASE as measured by the dummy along with the liquidity of banks as gauged by the LATA, LATD and the TDTA ratios. The findings also showed that the volatility in market fundamentals like the TDIR, M/BV, P/E and the inflation is significantly integrated with the liquidity of the Amman Stock Exchange on the long-run. However, the results of the Johansen co-integration and the VAR tests showed that there is no short or long run correlation between the liquidity of banks as measured by the TLTD ratio along with the fluctuations in market fundamentals. Moreover, the study

concluded that investors of Jordan behave irrationally towards the fluctuations in market fundamentals as well as they do not rely on the liquidity of the ASE in order to evaluate the liquidity of banks as measured by the TLTD ratio. This result is consistent with Vodova (2011a) as he found a non-significant correlation between the interest and the inflation rates along with the liquidity of banks as measured by the total loans to total deposit ratio.

However, in order to make sure that the long-run causality is really existed, the VECM was applied. Consequently, the findings revealed that variables like the TDIR, M/BV, P/E and the CPI are significantly correlated with the liquidity of banks as gauged by the LATA and the TDTA ratios. More specifically, the findings showed that the increase in the TDIR, M/BV ratio, P/E ratio and the inflation is positively impacting the liquidity of the banks as measured by the LATA and the TDTA ratios. Meaning the increase in market fundamental encourages investors of Jordan to deposit their funds into the banks instead of investing them in the Amman Stock Exchange. Therefore, the study concluded that investors of Jordan behave rationally towards the fluctuations in market fundamentals like the TDIR, M/BV, P/E and the inflation as measured by the consumer price index. In other words, since the increase in M/BV ratio and the P/E ratio motivates investors to employ their funds into the banks, the study concluded that investors of Jordan are classified as risk averse investors, because they do not invest in the ASE, when these ratios are high or the stocks are trading over their intrinsic values. In this regard, researchers like (Yamin and Ali, 2014; Shaban and Al-Zubi, 2014) found that investors of ASE consider the M/BV and P/E ratios as effective tools to evaluate whether a firm's share prices is trading over or under its intrinsic value. Furthermore, the study concluded that investors of Jordan adopt the assumption of the conventional economic theory, because they deposit their funds into

the banks when the interest rates go up. By contrast they prefer to liquidate their securities when these rates decline.

Beyond that, studies including Thang (2009) proved that the increase in the interest rates motivates investors to invest their funds into the banks. Thus, through comparing this argument with our results, it is found that the increase in the TDIR motivates investors of Jordan to deposit their money into the banks, rather than investing in the ASE. Consequently, the study concludes that the increase of these rates leads to increase the amounts of the loanable funds, which are supposed to be participating in the productivity process. Thereby, investors will find it easier to obtain the needed amounts of money, due to the lower costs of the borrowed funds. For instance, when the amounts of the loanable funds are limited, the rates on loans are supposed to be high, and only investors of the stock markets find it easy to get the needed amounts of money, through issuing new stocks and bonds. Thus, since our results showed a positive relationship between the volatility in inflation and the interest rates along with banks' liquidity, these results are found to be consistent with Al-Ali and Kassem (2013) as they found a positive correlation between the liquidity of banks and the volatility in the time deposit interest rates. Similarly, researchers including Malik and Rafique (2013) find a positive correlation between the rates of interest and banks' liquidity as gauged by the LATA ratio.

By contrast, researcher like Vodova (2011a) reported a non-significant correlation between the interest and the inflation rates along with the liquidity of banks. Likewise, Alper and Anbar (2011) showed a non-significant relationship between the liquidity of banks as measured by the liquid assets to total assets along with the rate of inflation. However, the

current research found that the decisions of Jordanian investors as measured by the LATD ratio are insignificantly impacted by market fundamentals like the TDIR, M/BV, P/E and the inflation on the long-run. However, to check if there is a short-run correlation between the liquidity of banks as measured by the LATA, LATD and the TDTA ratio along with market fundamentals, the Wald test was applied. Consequently, the results revealed that a short-run causality that is running from the volatility in the TDIR, M/BV ratio and the P/E ratio towards the liquidity of banks as captured by the LATA ratio and the TDTA ratio. Additionally, the findings showed a short-run correlation between the fluctuations in the M/BV ratio and the TDIR along with the decisions of Jordanian investors as measured by the LATD ratio. Meaning that, in the short-run investors of Jordan behave rationally towards the fluctuations in the TDIR, M/BV ratio and the P/E as well as they prefer to use these variables in the process of decision making. However, the results documented a non-significant short-run correlation between the market's liquidity and the inflation along with the decisions of Jordanian investors as measured by the liquidity of banks. Therefore, the study concluded that it is not possible to rely on the liquidity of the ASE in order to evaluate the liquidity of banks on the short-run.

Regarding the decisions of Jordanian investors as measured by the market's liquidity, the results revealed that there are long-run causalities running from the fluctuations in the TDIR, M/BV, P/E and the CPI towards the market's liquidity as gauged by the turnover ratio and the number of transaction. Additionally, the findings showed that when the ratios of M/BV and the P/E decline over time, investors of Jordan find it worthwhile diverting their financial resources to the ASE rather than keeping them into the banks. By contrast, the increase in these two ratios encourages investors to employ their financial resources

into the banks instead of diverting them to the Amman Stock Exchange, because the stock prices will be considered to be overvalued. Our findings agreed with the results of (Wong and Fung, 2002) as they found a significant correlation between the interest rates and the market's liquidity as captured by the trading volume as well as the turnover ratio. However, studies including (Ali, 2016) found an insignificant correlation between M/BV ratio and the stock market's liquidity as measured by the turnover ratio and the value traded. However, Shaban and Al-Zubi (2014); Yamin and Ali (2014) found that ratios like the M/BV and the P/E play a vital can be used to determine whether the stock prices are trading over or under their intrinsic values. Studies including Abdul-Khaliq (2013) mentioned that the liquidity of the ASE as measured by the turnover ratio is significantly affected by factors like the GDP growth. Anyway, though our study found a significant correlation between the inflation along with the liquidity of the ASE, however, researchers like Richard, Adekunie and Ojodu (2012) found an insignificantly correlation between the inflation and the growth of the Nigerian stock market. However, studies including Chordia, Sarkar and Subrahmanyam (2001) found that the rates of interest have a significant impact on the liquidity of the New York Stock Exchange as measured by the trading volume. Additionally, the results of the VECM showed a significant correlation between the liquidity of the Jordanian commercial banks as measured by the dummy along with the ASE's liquidity as gauged by the TOR and the NOT. In this context, studies including Levine and Zervos (1998); Beck and Levine (2001); Levine and Loayza (2000) found a positive correlation between the development of banking sectors and market's liquidity along with economic growth. Therefore, the current research concluded that when investors allocate their funds rationally that will be positively impacting economic growth and development. This view was supported by previous studies like (Sbeiti, Bhuyan and Cader, 2013). Additionally,

Kemboi and Tarus (2012) found a significant correlation between the developments of banks along with the stock market's development.

Moreover, the current research concluded that the stock market and the banks of Jordan are found to be complementary to each other in the function of linking the surplus units with the deficit units. Therefore, investors of Jordan can rely on the liquidity of banks in order to evaluate, or anticipate the liquidity of the ASE as measured by the TOR and the NOT. By contrast, the results of the VECM revealed that the liquidity of the Jordanian commercial banks as measured by the dummy is insignificantly correlated with the stock market's liquidity as measured by the TV and the VT. In this regard, Sbeiti, Bhuyan and Cader (2013) revealed that the financial market and the banking sector are complementary to each other in the function of supplying financial services to nations' economies. Kemboi and Tarus (2012); Beck, Levine and Zervos (1998) find that the stock market's liquidity is significantly correlating with the performance of the banking sector. However, to find out if the market fundamentals are integrated with the market's liquidity on the short -run, the Wald $\chi 2$ technique was employed. Consequently, the results proved that the volatility in the TDIR, M/BV ratio, P/E ratio and the inflation are significantly impacting the decisions of Jordanian investors on the short-run as measured by the TOR and the TV. Further results revealed that the volatility in the TDIR, M/BV ratio, and the inflation is significantly influencing the liquidity of the ASE as measured by the value traded and the number of transaction. Therefore, the study concluded that on the short-run, investors of Jordan behave rationally towards the volatility in market fundamentals like the TDIR, M/BV ratio, P/E ratio and the inflation. Additionally, investors of Jordan rely on the liquidity of banks

in order to evaluate the liquidity of the ASE as gauged by the trading volume on the short-run.

Moreover, since this research is classified as the first Jordanian study that is focused on answering the impact of market fundamentals in investors' perception, the results of this research are expected to extend the available literature that is focused on investor decisions and investment behaviour. The study will also provide researchers, academicians and investors with important information regarding the fundamental relationship of the TDIR, M/BV, P/E ratio and the inflation along with the liquidity of banks, and financial markets. Additionally, the results are expected to help investors and decision makers to rationalise their decisions, during both the tranquil and the unstable financial periods. However, since this research aims at identifying the impact of market fundamentals in the liquidity of banks and the stock market, the findings are expected to help banks' management and the management of the Amman Stock Exchange to determine investors' behaviour in the future. In other words, through relying on the role of market fundamentals to shape the decisions of Jordanian investors, the managements of banks and the ASE will try to predict the volumes of deposits or stocks, which are estimated to be liquidated, or invested during a specific period of time.

Eventually, the study tends to apply the two-way Anova analysis test in order to explain the behaviour of Jordanian investors towards the impacts of the 2007/8 financial crisis. For this purpose, the study period was divided into three stages. The pre-crisis period, which spans from Q1/2000-Q4/2007, the crisis period extends from Q1/2008- Q4/2011 and the post crisis period that spans from Q1/2012 towards the end of Q4/2014. Conse-

quently, the results showed that the latest crisis has impacted the liquidity of the Jordanian commercial banks as measured by the LATA and the TDTA ratios, due to the different impacts of the fluctuations in the TDIR and the M/BV ratio. The results also revealed that the liquidity of banks as measured by the LATD ratio was impacted by the 2007/8 financial crisis, due to the impacts of the fluctuations in the TDIR. By contrast, the findings revealed that the behaviours of Jordanian investors as captured by the TOR have not impacted by the 2007/8 financial crisis, due to the stable impacts of the fluctuations in the TDIR, the M/BV ratio and the inflation. However, the results showed that the liquidity of the ASE as measured by the TOR, VT, NOT and the TV was affected by the financial crisis, due to the impacts of the fluctuations in the P/E ratio. Additionally, the behaviour of Jordanian investors as measured by the trading volume was impacted by the 2007/8 financial crisis, due to the fluctuations in the inflation. Furthermore, the results revealed that the 2007/8 financial crisis was affected the liquidity of the ASE as measured by the number of transaction, due to the different impacts of the TDIR. Though the findings confirmed that the recent crisis was influenced the decisions of Jordanian investors, however, the study concluded the latest crisis had a slight impact on the behaviour of Jordanian investors as measured by the liquidity of banks and the ASE. Ahid and Augustine (2012) stated that the Jordanian banking sector was not affected by this crisis, due to the weak integration of this sector with the sectors of the global markets. The authors also mentioned that the CBJ played a vital role to mitigate the impacts of this crisis upon the banking sector's performance. This role was conducted via imposing a set of regulations on the loan's policies. Studies including Al-Zyadat and Al-Kharabsheh (2013) mentioned that the latest global crisis was significantly impacting the liquidity of the ASE, as measured by the turnover ratio. Al-Rjoub (2011) confirmed that the recent crisis was inversely affecting the perfor-

mance of the ASE. Furthermore, Afzal (2012); Charoenwong, Ding, and Yang (2012) found that the recent crisis was negatively impacting the performance of the Asian stock markets. Habibi (2009) mentioned that oil importing countries like Jordan, was adversely impacted by the recent financial crisis, due to the sharp decline in the amounts of investments inflows from oil producing countries, such as Dubai or Qatar. By contrast, Mashal (2012) revealed that the latest crisis was not impacted the performance of Jordanian banking sector, due to the low integration of the Jordanian economy with the international economy.

6.4 Recommendation

Results from the VECM revealed long-run correlations between the volatility in the TDIR, M/BV ratio, P/E ratio and the inflation along with investors' decisions, as measured by the liquidity of banks. Therefore, this research recommends investors of Jordan to rely on the market fundamentals of this research in order to evaluate their investment decisions. In other words, the study recommends investors to deposit their funds into the banks when the TDIR and the inflation go-up. However, since the results discovered a long-run correlation between the volatility in the M/BV and the P/E ratios along with the number of transactions, investors of Jordan can consider these ratios as effective techniques to evaluate the market's activity. The study also recommends investors to rely on the liquidity of banks in order to anticipate the direction of the ASE liquidity as measured by the trading volume. Additionally, techniques like the TDIR and the inflation are recommended to be used by investors and policy makers in order to manage and evaluate banks' liquidity as measured by the LATA and the TDTA ratios. Moreover, through managing the levels of

liquidity, policy makers will be able to meet their financial needs in the future, and subsequently, that will maximise depositors' satisfaction. This will be positively impacting banks' stock prices as well as banks' performance. However, to explain the role of market fundamentals in the behaviour of Jordanian investors before, during and after the financial crisis, the study's period was divided into three stages. These stages are including the pre-crisis, the crisis, and the post crisis period. Thereafter, the study applied the Pearson correlation test as an additional estimation in order to identify investors' preferences, before, during and after the 2007/8 crisis. In appendix J, p. 570- 573, see tables 6.1-6.3 which are explained the behaviour of Jordanian investors before, during and after the 2007/8 financial crisis.

The results discovered that when the mean of the TDIR before the crisis was 0.0445, investors of Jordan preferred to invest their funds into the banks, through considering this rate to be high compared with the overall mean (0.044). By contrast, in the crisis period the mean of the TDIR declined to 0.0429, however, the funds of Jordanian investors are found to be invested into the banks instead of directing them to the stock market of Jordan. Meaning that during the crisis period investors of Jordan became more rational and risk averse. However, during the crisis period the results showed that when the inflation index increased to 97.04, Jordanian investors preferred to deposit their funds into the banks, through considering this type of investment to be safer than investing in the stock market.

However, after the crisis period this index was increased to 0.0439, and investors of Jordan tend to invest into the banks and the ASE, because in that period the mean of the

M/BV was very low (1.38) compared with the overall mean (1.90). Although, before the crisis period the means of the M/BV (2.09) and the P/E ratio were higher than the total means, investors of Jordan did not liquidate their securities in order to invest them into the banks. Meaning that, in the pre-crisis period investors of Jordan are found to be risk seekers or speculators; while in the crisis period they became more rational or risks averse investors. However, after the crisis period, investors of Jordan tend to invest in the ASE due to the low M/BV and P/E ratios.

Moreover, the current research recommends investors of Jordan to use the study's suggested framework besides the other techniques, which they are using in the process of decision making. This framework seems to be more suitable for investors who are risk averse and aim to make rational investment decisions, instead of speculation purposes. The study also recommends the Central Bank of Jordan to rely on the results of this research to build suitable strategies in order to enhance the levels of liquidity and the loanable funds in the Jordanian banking sector. Consequently, that will contribute in enhancing the economy of Jordan through investing the liquidity's surplus or meeting the needs of the deficit units. In appendix J, p. 575-576, see table 6.4 and diagram 6.1 for the suggested framework, which is recommended to be used by risk averse investors who are looking for making rational investment decisions. Furthermore, the current study recommends researchers to rely on the framework as well as econometric models of this research in order to conduct additional studies to explain the other influential variables, which are affecting investors' decisions and saving behaviour. Consequently, that will enhance the process of allocating funds efficiently, as well as improving the stability of the banking and financial

system. Eventually that is expected to be positively linked with economic growth and development.

6.5 Final Remarks

This research tries to answer whether or not the volatility in the TDIR, M/BV ratio, P/E ratio and the inflation impacting the decisions of Jordanian investors. The study also looks at explaining investors' behaviours towards the impacts of the 2007/8 financial crisis. For this purpose, the study formulated four main hypotheses. The first hypothesis postulates that the fluctuations in market fundamentals are significantly impacting the decisions of Jordanian investors. The second hypothesis assumes a long-run integration between the fluctuations in market fundamentals along with the decisions of Jordanian investors. The third hypothesis postulates a significant long and short-run causality that is running from the fluctuations in market fundamentals towards the liquidity of banks and the ASE. The fourth one suggests that before, during or after the financial crisis, there are no significant differences between investors' decisions due to the effects of the fluctuations in market fundamentals. To test these hypotheses; the study employs a time series data covers the period Q1/2000-Q4/2014.

Through employing empirical techniques like the ADF, regression, Johansen, VAR, VECM and Wald tests, and the Anova test, the study was able to accomplish the study's aims and objectives. Consequently, results from the ADF test accepted the null hypothesis when the series variables have been tested at levels. However, after converting them into

the first difference, all the variables became stationary and the alternative hypothesis was accepted.

Results from the multiple regression tests rejected the first hypothesis, which assumes that the fluctuations in market fundamentals are significantly impacting the decisions of Jordanian investors. More specifically, the results confirmed that investors of Jordan do not rely on variables like the TDIR, M/BV ratio and the P/E ratio in order to make their investment decisions. By contrast, the findings showed that the inflation is significantly impacting the decisions of Jordanian investors as captured by the TOR, TV and the NOT. However, since results from the ADF test found that all the variables are integrated of the same order I (1), the study moved forward to run the Johansen co-integration test in order to check whether there are long-run causalities running from the market fundamentals to the decisions of Jordanian investors. Results from the Johansen test accepted the second main and sub-hypotheses, which assumed a long-run integration between the market fundamentals and the decisions of Jordanian investors as measured by the LATA, LATD, TDTA, TOR, VT, TV and the NOT. However, relying on the Johansen's findings, the study applied the VAR or the VECM tests as well as the Wald tests in order to identify the nature of the relationships between the study's variables. Consequently, the VECM accepted the third hypothesis which assumed a long-run causality running from the fluctuations in market fundamentals towards the decisions of Jordanian investors as gauged by the LATA, TDTA, TOR and the NOT. However, the third hypothesis was rejected when the liquidity of banks and the ASE were captured by the TLTD, LATD, and VT and the TV. The results also confirmed that there is no significant association between the liquidity of banks as proxied by the dummy along with the market's liquidity as captured by the value traded

or the trading volume. Similarly, the findings revealed that there is no correlation between the liquidity of banks as measured by the TLTD or the LATD along with the market's liquidity as captured by the dummy. Furthermore, in order to assess the impacts of the 2007/8 financial crisis in investors' decisions, the two-way Anova tests was employed. Consequently, the results showed that there are no differences between investors' decisions due to the impacts of market fundamentals. In other words, the findings revealed that the latest crisis was slightly impacted the decisions of Jordanian investors as measured by the liquidity of banks and the stock market.

Moreover, through comparing my results with the previous studies, I concluded that the results of this research maybe are different due to the different investment culture and background as well as investors' preferences. For instance, since each investor has different thoughts and beliefs that will completely affect the way of how he/she invests. In addition, since the critical appraisal mentioned that the CBJ plays a vital role in mitigating the impacts of the financial crisis, therefore, the study concluded that financial authorities play a vital role in impacting investors' decisions and saving behaviours.

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Appendices

Appendices

Appendix A

The Economy of Jordan "Tables and Figures"

Table 2.1: The Contribution of Foreign Grants and Remittances

The following table shows statistics regarding the amounts, and the contribution of foreign grants and remittances in the economy of Jordan. The following statistics demonstrate that the amounts of foreign grants inflow to Jordan decreased from $ 141.4 million in 2004 to $ 102 million in 2013. The total amounts of remittances inflow increased from $ 2330324463 million in 2004 to $ 2642676056 million in 2013.The contribution of remittances in the GDP of Jordan decreased from 20.4% to 10.8 by the end of 2013. All the numbers are in million $.

Year	Foreign Grants $	Remittances $	Foreign Grants (% of GDP)	Remittances (%of GDP)
2004	141.4	2330324463	Unavailable	20.4
2005	76.1	2420874471		19.2
2006	144	2793935120	Unavailable	18.6

2007	194.7	439,436,620	Unavailable	19.4
2008	225.2	3510160301	Unavailable	16
2009	230.7	3465211268	Unavailable	14.5
2010	123.1	3517024454	Unavailable	13.3
2011	169	3368028169	Unavailable	11.7
2012	301.4	3489577465	Unavailable	11.3
2013	102	2642676056	Unavailable	10.8

Source: CBJ (2015). Available at: <http://statisticaldb.cbj.gov.jo/index?action=level4#page_up>.

Table 2.2: The Contribution of the Banking Sector

The following table illustrates the contribution of the Jordanian banking sector in the economy of Jordan, over the period 2006-10.

% of GDP	**2006**	**2007**	**2008**	**2009**	**2010**
The Contribution of market capitali-	112	128	82.1	62.2	53.3

Appendices

sation of listed banks					
The contribution of banks' assets	219	213	185	179	186
The contribution of banks' deposits	132	127	112	114	120
The contribution of banks' credit	88	89.7	81	74.8	77

Source: Quandah (2012, p. 4).

Diagram 2.1: The Size of the Jordanian Banking Sector

The following diagram shows that the consolidated banking sector in Jordan encompasses 26 commercial and Islamic banks, with a combined total of 695 branches. These branches are spreading throughout the Hashemite kingdom of Jordan. However, according to the Central Bank of Jordan these banks are classified into two main categories. These categories consist of the national banks and the branches of foreign banks. Each of these groups is divided into commercial and Islamic banks, as shown in the following diagram (CBJ, 2015):

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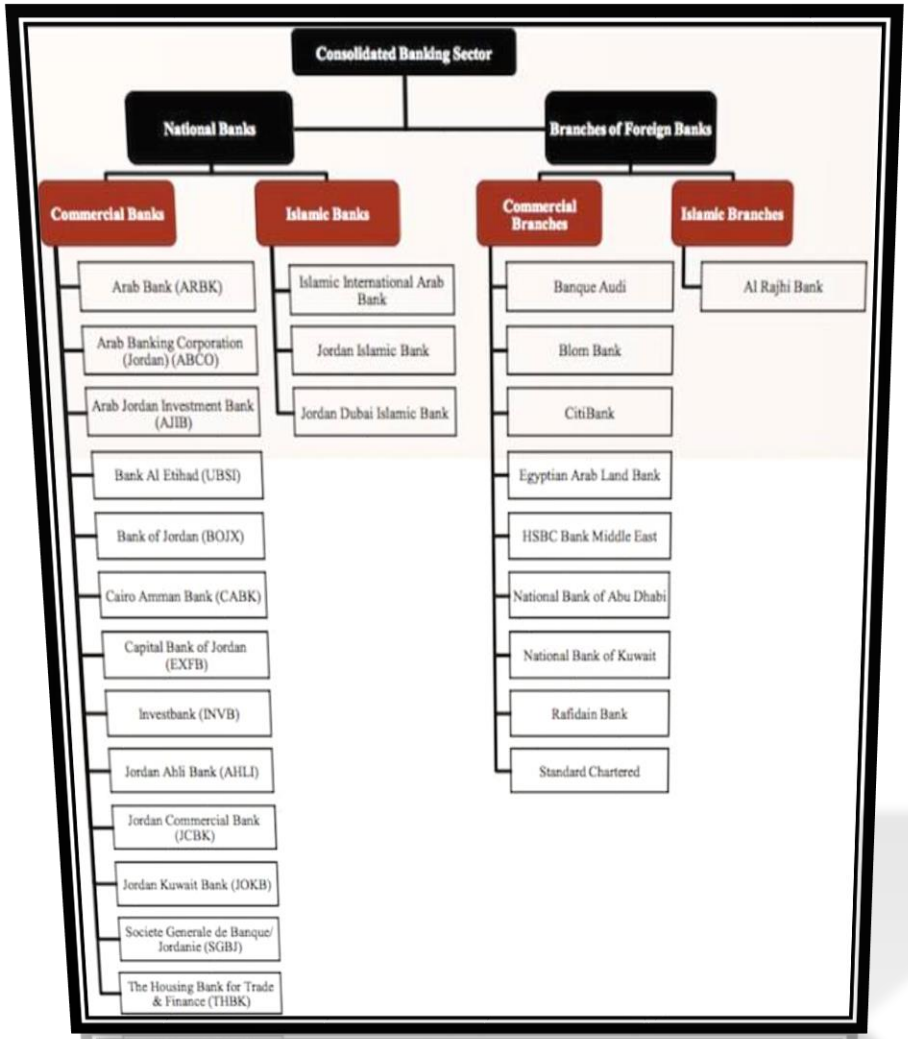
Consolidated Banking Sector
National Banks
Branches of Foreign Banks
Commercial Banks
Islamic Banks
Commercial Branches
Islamic Branches
Arab Bank (ARBK)
Arab Banking Corporation (Jordan) (ABCO)
Arab Jordan Investment Bank (AJIB)
Bank Al Etihad (UBSI)
Bank of Jordan (BOJX)
Cairo Amman Bank (CABK)
Capital Bank of Jordan (EXFB)
Investbank (INVB)
Jordan Ahli Bank (AHLI)
Jordan Commercial Bank (JCBK)
Jordan Kuwait Bank (JOKB)
Societe Generale de Banque/ Jordanie (SGBJ)
The Housing Bank for Trade & Finance (THBK)
Islamic International Arab Bank
Jordan Islamic Bank
Jordan Dubai Islamic Bank
Banque Audi
Blom Bank
CitiBank
Egyptian Arab Land Bank
HSBC Bank Middle East
National Bank of Abu Dhabi
National Bank of Kuwait
Rafidain Bank
Standard Chartered
Al Rajhi Bank

Appendices

Table 2.3: The Amounts of the Time Deposits in Jordan

The following table shows the amounts of the time deposits, which are held by the licensed Jordanian banks, over the period 1990-2014. The following statistics revealed that during the last three decades, the value of these deposits rocketed from JOD 1781 million in 1990 to JOD 17085 million by the end of 2014.

Year	Amount of Time Deposits in JOD
1990	1781.000
1991	2665.800
1992	3038.700
1993	3226.500
1994	3624.800
1995	3964.800
1996	4281.000
1997	4562.900
1998	4948.000

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1999	5549.900
2000	5940.000
2001	6124.800
2002	6213.500
2003	6120.000
2004	6491.400
2005	7488.300
2006	8759.400
2007	9983.300
2008	11447.00
2009	12424.600
2010	13556.800
2011	14126.400
2012	13802.400
2013	15454.900

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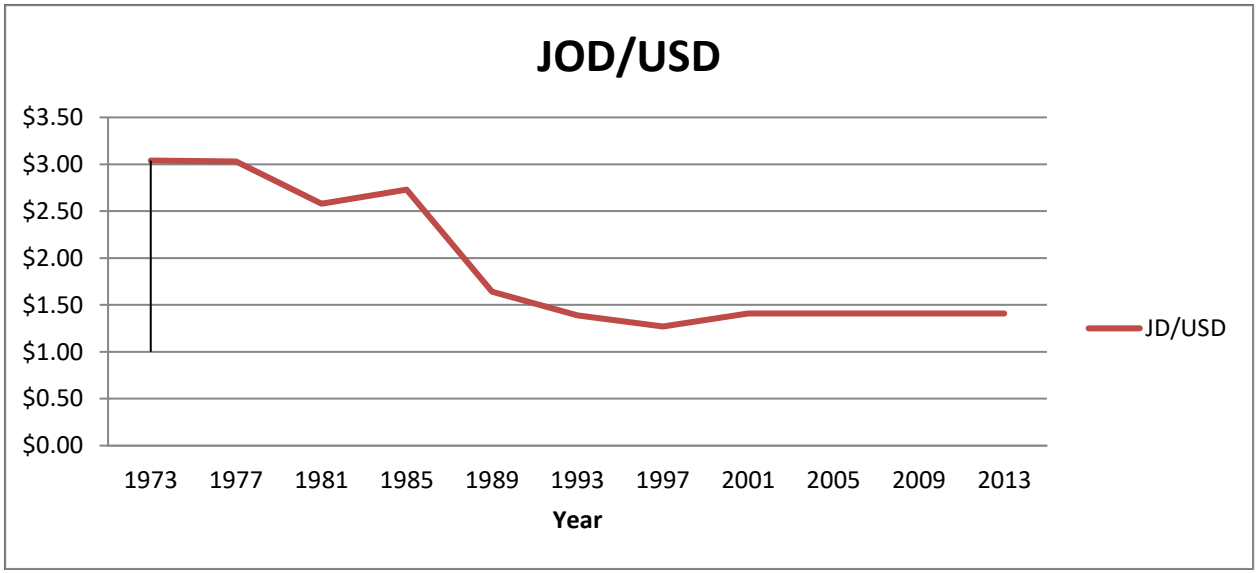
2014	17085.000

Source: CBJ (2015).

Chart 2.1: The Exchange Rate of the JOD with the USD

The following chart describes the historical-official exchange rates of the Jordanian Dinar with the USD; over the period 1973-2013.The chart shows that the JOD was stronger than the USD in term of exchange rate. However, during the period 1973-1989 the power of the JOD decreased dramatically. By the end of 1989, the exchange rate of the $ against the JOD equalled $ 1.5 per 1 JOD. The chart shows that in 1995, the currency of Jordan was pegged with the USD at a fixed rate equals $1.4/1JOD.

Appendices

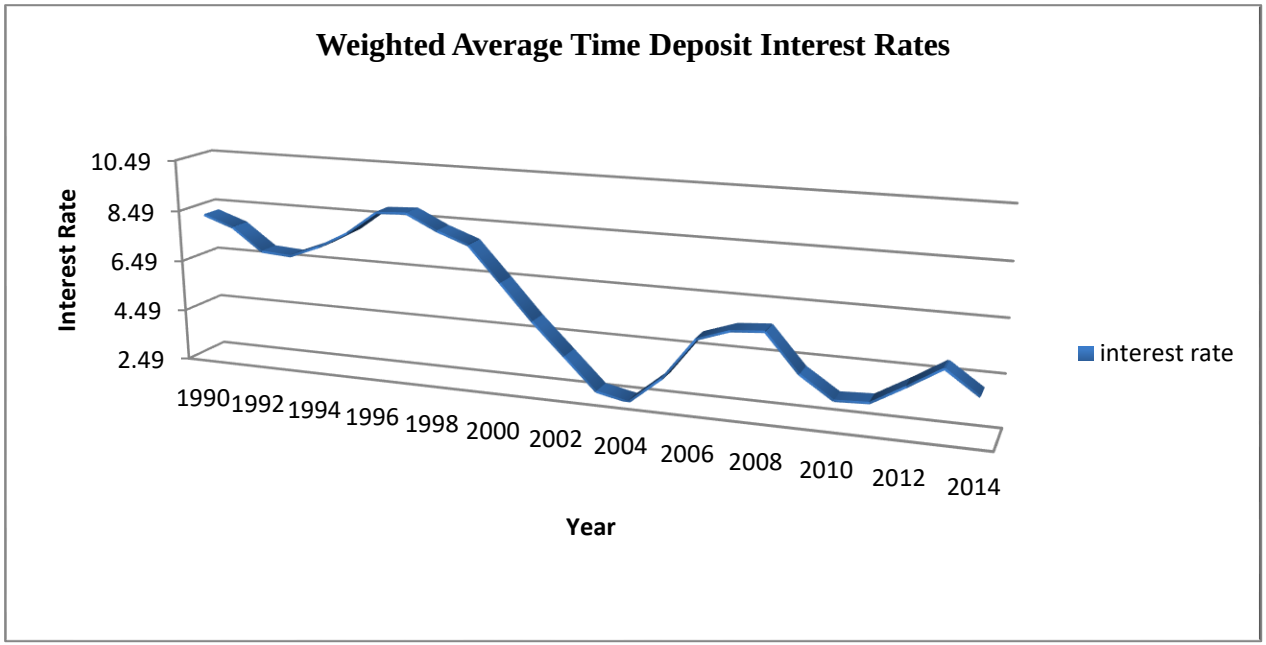


Source: Fxtop (2014). Available at: http://fxtop.com/

Chart 2.2: Weighted Average Time Deposit Interest Rates

The following chart describes that the weighted average time deposit interest rates fluctuated dramatically. For instance, the following statistics showed that during the period 1990-2004, these rates declined from 8.2 to 2.49. However, by the end of 2004 towards the end of 2014, the time deposits interest rates increased from 2.49 to 4.11.

Appendices



Source: CBJ (2015). Available at: http://statisticaldb.cbj.gov.jo/index?action=level4&page_no=2

Chart 2.3: Weighted Average Interest Rates on Loans and Advances

The following chart shows that during the period 1990-2004, the interest rates on loans and advances decreased from 0.11 to 0.8. Thereafter, these rates increased from 0.8 by the end of 2004 to 0.9 by the late of 2014.

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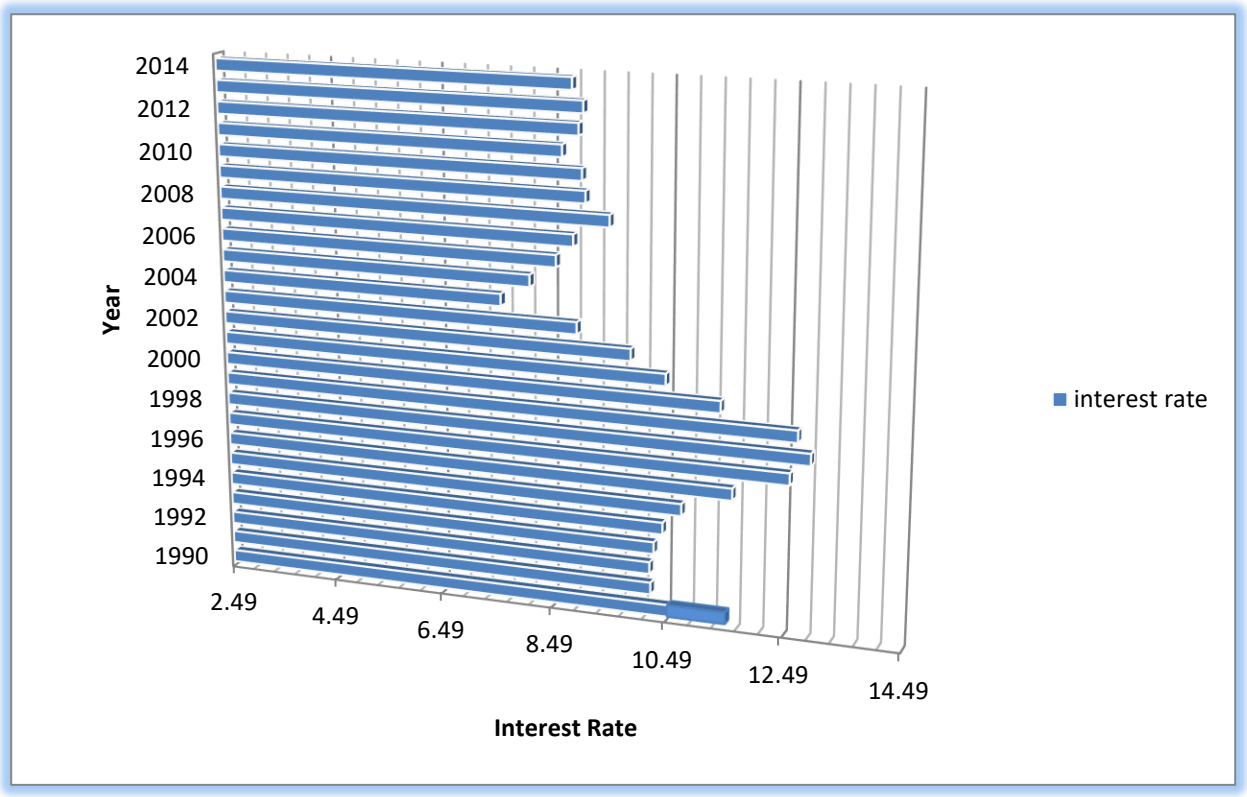

Source: CBJ (2015). Available at: http://statisticaldb.cbj.gov.jo/index?action=level4&page_no=2

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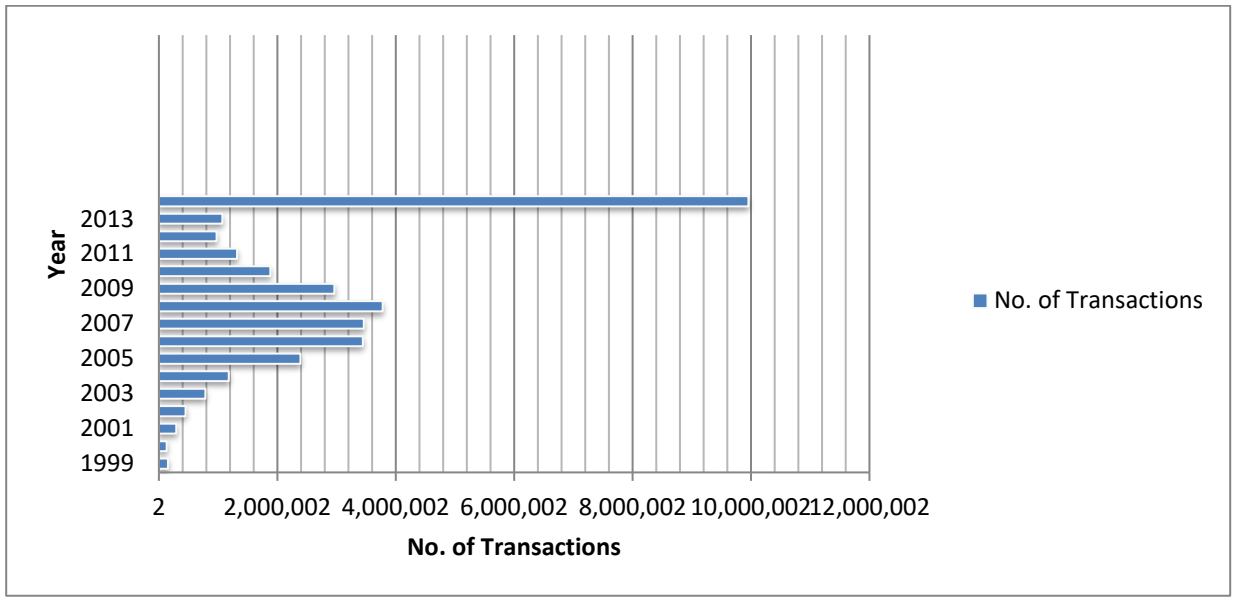
Chart 2.4: The Number of Transactions in the ASE

The following chart shows that during the period 1999-2014, the number of transactions in the Amman Stock Exchange increased gradually from 154, 603 thousand to 3, 780 thousand. After that it declined from 3, 780 thousand to 1, 074 thousand by the end of 2008 and 2013, respectively. However, by the end of 2014 the number of these transactions increased to 955 thousand.



Source: ASE (2015). Available at: http://www.ase.com.jo/

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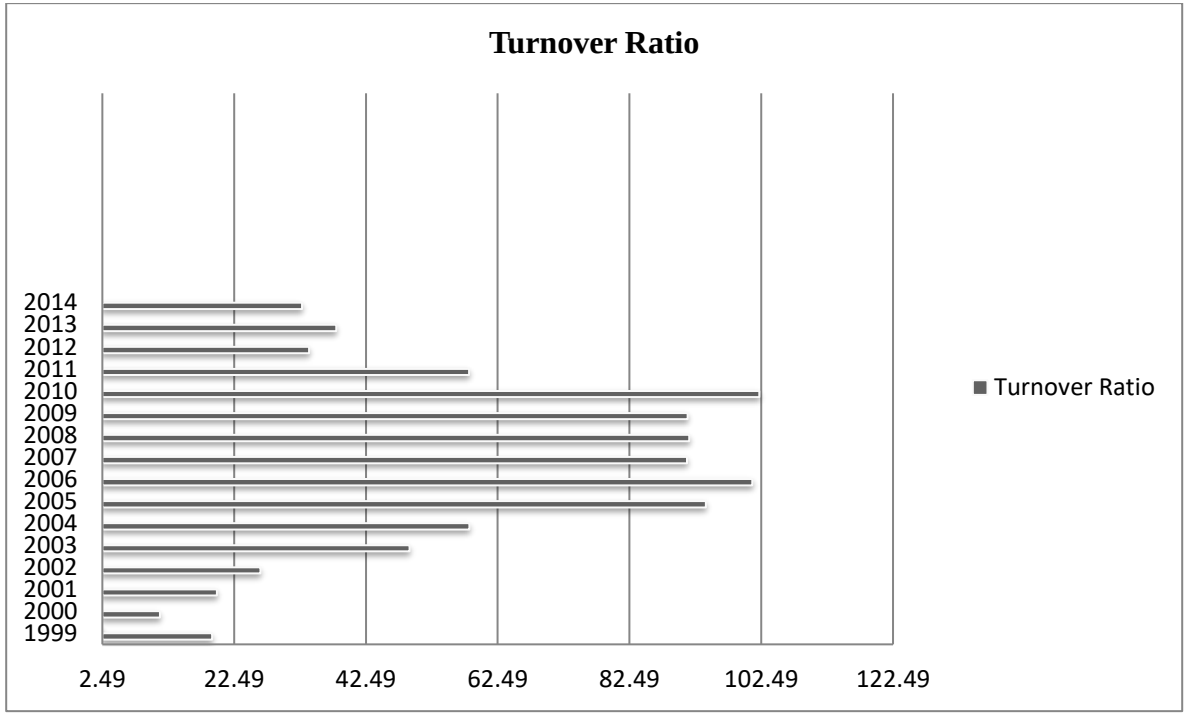
Chart 2.5: The Turnover Ratio in the ASE

The following chart shows that in the Amman Stock Exchange, the turnover ratio fluctuated considerably. For instance, the following statistics showed that this ratio increased from 19.13 in 1999 to 102.17 by the end of 2010. Thereafter it slumped to 32, 81 by the end of 2014.



Source: ASE (2015). Available at: http://www.ase.com.jo/

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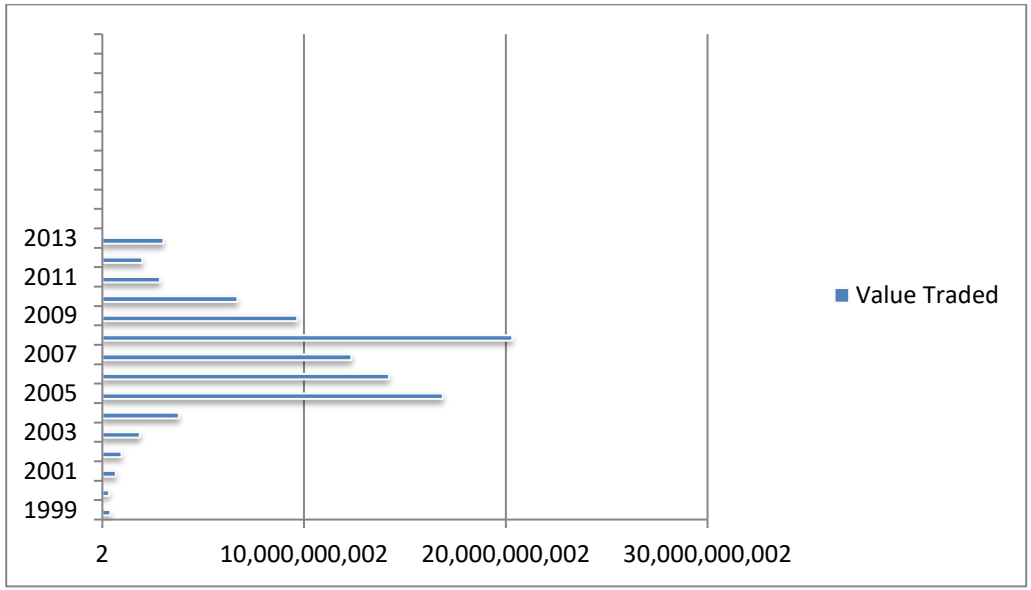
Chart 2.6: The Value Traded in the ASE

The following chart shows that the total value of the stocks, which are traded in the ASE, fluctuated considerably. The following statistics showed that during the period 1999-2005, the value traded increased from JOD 389, 476 million to JOD 16, 871 billion, and then declined to 12, 384 billion by the end of 2007. However, in 2008, the amount of the traded shares increased to JOD 20,318 million, and finally plunged to JOD 2,263 million by the end of 2013.



Source: ASE (2015). Available at: http://www.ase.com.jo/

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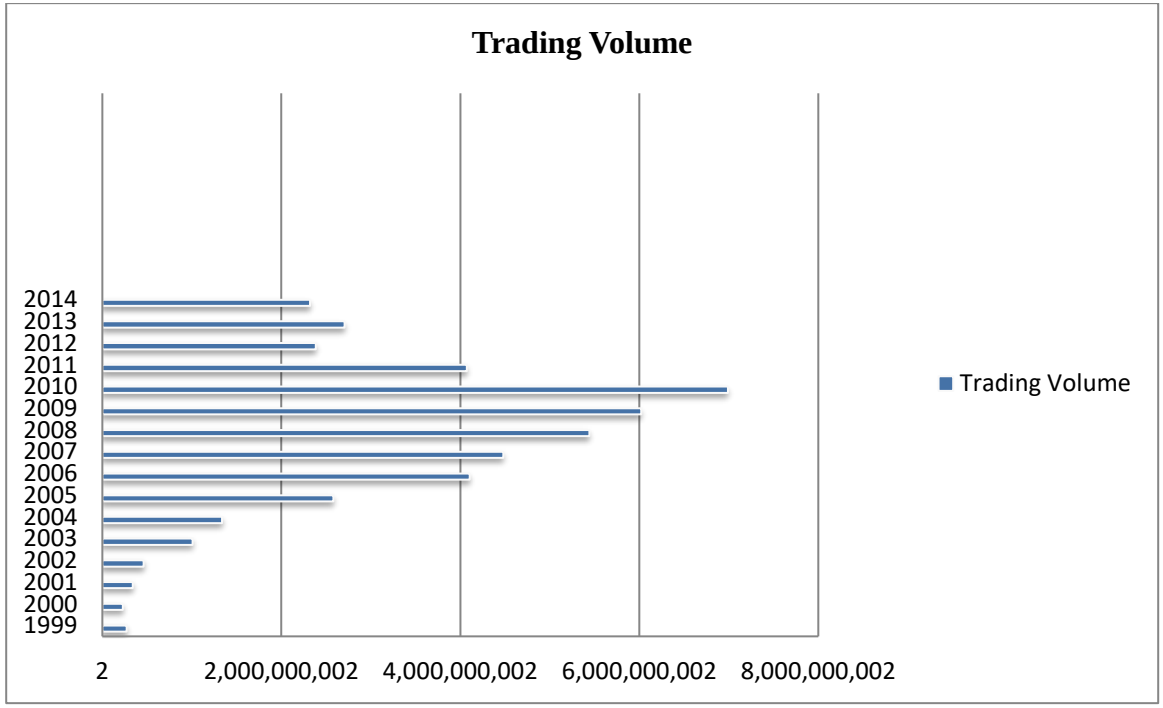
Chart 3.7: The Trading Volume in the ASE

The statistics revealed that during the period 1999-2010, the total number of traded shares in the Amman Stock Exchange rose gradually by 6717 million. Anyway, during the period 2010-14, this indicator declined from 6988 million to 2,321 million, consecutively.



Source: ASE (2015). Available at: http://www.ase.com.jo/

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Table 2.4: The Value Traded of the Amman Stock Exchange's Main Sectors

The following table demonstrates the value traded of the ASE's main sectors during the period 2000-2013.

Year	Financial Sector	Services Sector	Industrial Sector
2000	138,597,051	58,156,874	91,042,612
2001	323,691,265	88,584,016	256,377,393
2002	397,744,122	101,470,613	451,058,259
2003	832,182,588	203,120,441	819,872,983
2004	2,403,764,844	379,944,408	1,009,541,799
2005	13,200,688,924	1,195,920,637	2,474,442,386
2006	11,570,201,564	942,189,854	1,697,479,173
2007	8,779,234,370	1,657,992,661	1,910,874,879
2008	9,638,936,812	5,422,241,865	5,256,835,871
2009	6,363,773,746	2,030,846,061	1,270,692,520
2010	4,174,112,697	1,744,663,490	771,210,968
2011	1,757,351,376	576,006,319	516,894,934

2012	1,189,542,872	403,893,684	385,377,323
2013	2,221,449,153	408,120,453	397,685,580

Source: CBJ (2015). Available at: http://statisticaldb.cbj.gov.jo/index?action=level4&page_no=0

Table 2.5: The Licensed Brokerage Companies in the Amman Stock Exchange

The following table shows that there are 60 brokerage companies in the stock market of Jordan. These licensed companies focus on helping investors in the process of trading securities.

No.	Company's Name	Legal Status	Capital
1	AJIAD FOR SECURITIES	Limited Liability	3,422,00
2	SHARECO BROKERAGE COMPANY	Public Shareholding	9,000,000
3	UNITED FINANCIAL INVESTMENTS PLC.	Public Shareholding	8,000,000
4	ALNADWA FOR FINANCIAL SERVICES AND	Limited Liability	2,500,000

	INVESTMENT		
5	ALFARES FINANCIAL INVESTMENTS CO	Limited Liability	6,300,000
6	GLOBAL INVESTMENT HOUSE-JORDAN	Limited Liability	20,000,000
7	AL-BILAD FOR SECURITIES AND INVEST-MENT	Public share-holding	10,000,000
8	ARAB COOPERATION FINANCIAL INVEST-MENTS CO.	Limited Liability	15,600,000
9	EFG-HERMES JORDAN	Limited Liability	3,000,000
10	AL-AMAL FINANCIAL INVESTMENTS CO.	Public share-holding	15,000,000
11	DELTA FINANCIAL INVESTMENTS	Limited Liability	3,200,000
12	INTERNATIONAL FINANCIAL CENTER	Limited Liability	5,000,000
13	AL-AWAEL INTERNATIONAL SECURITIES	Limited Liability	6,935,000
14	AL-OMANA'A PORTFOLIO AND INVEST-MENT CO.	Limited Liability	9,000,000
15	UMNIAH FOR FINANCIAL INVESTMENTS	Limited Liability	1,250,000

16	MUBADALA FINANCIAL INVESTMENTS COMPANY W.L.L	Limited Liability	3,500,000
17	ALSAFWA FOR FINANCIAL INVESTMENTS CO	Public Share-holding	2,469,232
18	EMERGGING MARKETS FOR FINANCIAL SERVICES & INVESTMENT CO.	Private share-holding	2,500,000
19	SANABEL AL-KHAIR FOR FINANCIAL IN-VESTMENTS	Limited Liability	5,000,000
20	CAPITAL INVESTMENTS	Limited Liability	10,000,000
21	UNITED ARAB JORDAN COMPANY FOR IN-VESTMENT AND FINANCIAL BROK	Limited Liability	2,500,000
22	AL ARABI INVESTMENT GROUP CO.	Limited Liability	14,000,000
23	TANMIA SECURITIES INC.	Private Share-holding	5,000,000
24	JORDANIAN EXPATRIATES FOR FINANCIAL BROKERAGE	Limited Liability	4,000,000

25	THE ARAB FINANCIAL INVESTMENT CO.	Public Share-holding	15,000,000
26	UNION FINANCIAL BROKERAGE	Limited Liability	5,000,000
27	SABAEK FOR FINANCIAL SERVICES	Limited Liability	3,000,000
28	JORDANIAN SAUDI EMIRATES FINANCIAL INVESTMENT CO.	Limited Liability	3,000,000
29	AL-HEKMA FINANCIAL SERVICES	Limited Liability	2,280,000
30	AL-MULTAQAA BROKERAGE AND FINAN-CIAL SERVICES COMPANY	Limited Liability	3,000,000
31	AL-MAWARED FOR BROKERAGE	Limited Liability	10,000,000
32	NATIONAL PORTFOLIO SECURITIES	Public Share-holding	10,000,000
34	SHUA'A FOR SECURITIES TRADING AND INVESTMENT	Limited Liability	3,000,000
35	AL-WATANIEH FOR FINANCIAL SERVICES CO	Limited Liability	5,000,000

36	AL-SALAM FOR FINANCIAL INVESTMENTS	Limited Liability	2,150,000
37	AL EMAN FINANCIAL INVESTMENT CO.	Limited Liability	1,707,067
38	MISC FINANCIAL BROKERAGE CORPORA-TION	Limited Liability	750,000
39	JORDAN GULF INVESTMENT CO.	Limited Liability	2,250,000
40	THE FINANCIAL INVESTMENT COMPANY FOR SHARES AND BONDS	Limited Liability	1,350,000
41	EXCEL FOR FINANCIAL INVESTMENT	Private Share-holding	3,500,000
42	ELITE FINANCIAL SERVICES	Limited Liability	2,306,979
43	ALWAMEEDH FOR FINANCIAL SERVICES AND INVESTMENT	Limited Liability	1,363,972
44	SOCIETE GENERALE JORDAN-BROKERAGE	Limited Liability	750,000
45	AHLI BROKERAGE COMPANY	Private Share-holding	15,000,000

46	BLOM SECURITIES	Limited Liability	5,000,000
47	IBDA' FOR FINANCIAL INVESTMENT	Limited Liability	2,500,000
48	AL-YASMEEN FOR SECURITIES & INVESTMENTS	Limited Liability	2,498,055
49	ALNOUR FOR FINANCIAL INVESTMENTS	Limited Liability	750,000
50	AL SHOROUQ FINANCIAL BROKERS	Limited Liability	750,000
51	INTERNATIONAL FINANCIAL ADVISORS	Limited Liability	4,000,000
52	AL-AULA FINANCIAL INVESTMENTS CO	Limited Liability	9,410,000
53	THE BANKERS FOR BROKERAGE AND FINANCIAL INVESTMENTS	Limited Liability	5,000,000
54	STITHMAR FOR FINANCIAL SERVICES	Limited Liability	4,100,000
55	AMMAN INVESTMENT & SECURITIES CO. LTD.	Limited Liability	1,500,000
56	INTERNATIONAL BROKARAGE AND FINANCIAL MARKETS COMPANY	Public Shareholding	19,000,000
57	AL-SAHM INTERNATIONAL FOR INVEST-	Limited Liability	1,250,000

	MENT & BROKERAGE		
58	IMCAN FOR FINANCIAL SERVICES	Limited Liability	4,976,329
59	ARAB FALCON CO. FOR SELLING & BUYING SECURITIES LTD.	Limited Liability	2,500,000
60	AMAN FOR SECURITIES LTD.	Public Share-holding	20,000,000

Source: ASE (2015). Available at: http://www.ase.com.jo/

Table 2.6: The Trading Commissions in the Amman Stock Exchange

This table describes the minimum and maximum commissions, which brokers receive for selling and buying's transactions in the ASE.

Security	**Lower Limit/ JOD**	**Upper Limit/ JOD**
Shares	JOD 5.4 per thousand JOD.	JOD 7.4 per thousand JOD.
Bonds	JOD 0.45 per thousand	JOD 0.95 per thousand

	JOD.	JOD.
Investment Units	JOD 2.0 per thousand JOD.	JOD 2.2 per thousand JOD.

Source: ASE (2015). Available at: http://www.ase.com.jo/

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Diagram 2.2: The Process of Funds Flow throughout the Financial System

The following diagram illustrates the direct and indirect process of funds movements in the financial system (Mishkin, et al., 2013, p. 24).

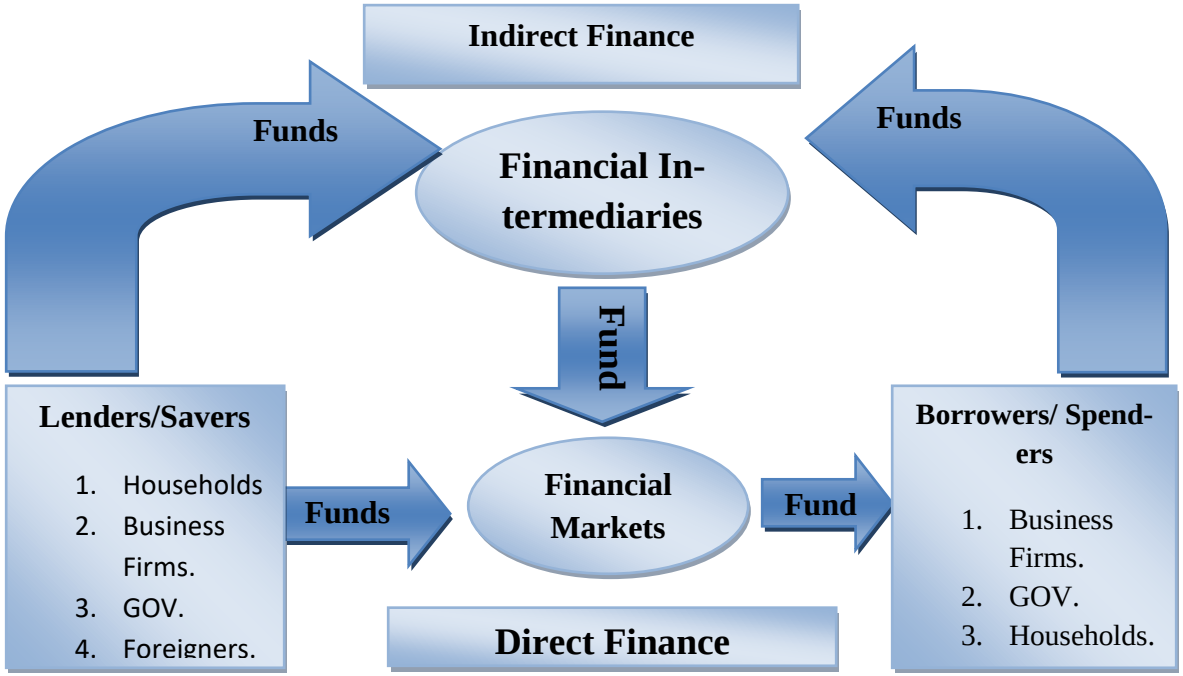

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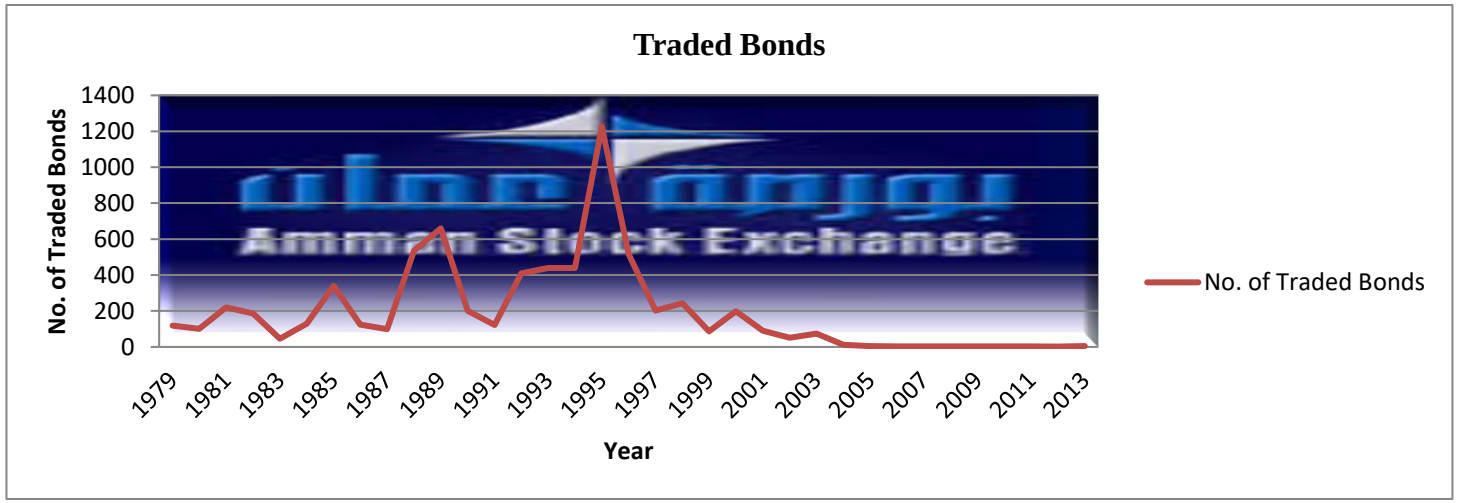
Chart 2.8: The Total Number of the Traded Bonds in the ASE

The following trend portrays the total number of the traded bonds in the Amman Stock Exchange, during the period 1978-2013.



Source: ASE (2014). Available at: http://www.ase.com.jo/

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Chart 2.9: The ASE's Stock Price Index

The following chart illustrates the price of the ASE's stock index, during the period 2000-2013. The following trend shows that during the period 2000-2005, the price of the stock index increased from 1330 to 8190 points, after that it decreased to 4336 points by the end of 2013.

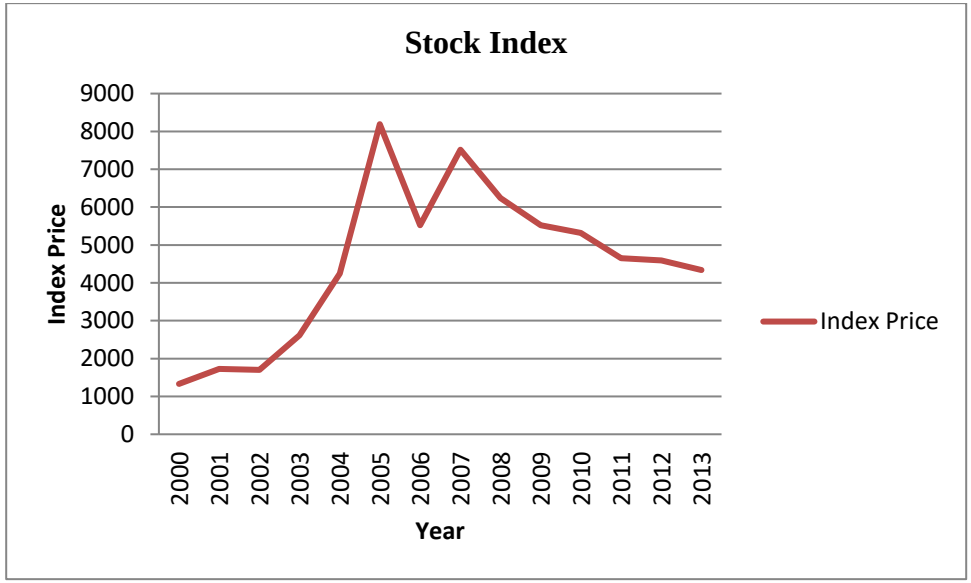

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Table 2.7: Interest Rates on Saving and Demand Deposit Accounts

The following statistics demonstrate the rates of interest, which are offered by the Jordanian commercial banks on the saving and demand accounts, over the period 2000-2014. From the following table, the volatility in interest rates of these accounts is found to be slight. However, during the 2010-2014 period, the change in these rates was relatively stable.

Year	Demand Interest Rates	Saving Interest Rates
2000	**0.012**	**0.037**
2001	**0.010**	**0.029**
2002	**0.009**	**0.018**
2003	**0.005**	**0.008**
2004	**0.003**	**0.007**
2005	**0.004**	**0.008**
2006	**0.008**	**0.009**
2007	**0.009**	**0.011**
2008	**0.010**	**0.010**

2009	**0.006**	**0.008**
2010	**0.004**	**0.007**
2011	**0.004**	**0.007**
2012	**0.004**	**0.007**
2013	**0.003**	**0.008**
2014	**0.004**	**0.008**

Appendices

Appendix B

Tables and Figures from Related Studies

Table 3.1: The Relationship of the E/P and M/BV Ratio along with the Stock's Returns in the Developing Stock Markets

The following table shows a statistics' summary regarding the correlation of the E/P and M/BV ratio with the stocks returns in the developing stock markets. Regarding to Jordan, the statistics showed that the correlation rate is 0.056. In other words, the table shows that there is a non-significant relationship between the E/P and the M/ BV ratio along with the stock returns in the Amman Stock Exchange.

Countries	Average Monthly Return		E/P		M/BV		Pearson Correlation	
	Mean	S.D	Mean	S.D	Mean	S.D	Corr.	Sig
Argentina	0.023	0.173	0.098	0.189	1.326	1.118	0.028	0.785
China	0.019	0.074	0.116	0.085	1.462	0.604	0.142	0.129
Colombia	0.009	0.116	0.098	0.052	1.099	0.526	0.009	0.924

Greece	0.025	0.119	0.077	0.034	2.695	1.667	0.159	0.090
India	0.004	0.109	0.058	0.022	3.029	1.286	-0.102	0.265
Indonesia	0.001	0.135	0.053	0.018	2.520	0.953	0.102	0.372
Jordan	***0.000***	***0.047***	***0.075***	***0.020***	***1.579***	***0.218***	***0.056***	***0.544***
Korea	0.016	0.117	0.048	0.015	1.414	0.558	0.303	0.001
Malaysia	0.011	0.106	0.043	0.019	2.594	0.986	0.512	0.000
Mexico	0.031	0.133	0.099	0.066	1.485	0.600	0.317	0.001
Nigeria	0.007	0.141	0.138	0.044	2.077	0.737	0.085	0.355
Pakistan	0.000	0.101	0.149	0.216	2.055	0.898	0.102	0.262
Philippines	-0.004	0.126	0.065	0.022	2.938	0.957	0.315	0.001
Taiwan	0.011	0.113	0.063	0.021	2.457	1.432	0.408	0.000
Thailand	0.024	0.136	0.041	0.018	3.948	2.792	0.296	0.001
Turkey	0.013	0.131	0.074	0.026	2.253	0.981	-0.104	0.253
Venezuela	0.034	0.191	0.096	0.077	4.040	1.932	0.006	0.952
Zimbabwe	0.014	0.148	0.096	0.062	1.777	0.918	-0.045	0.632
Portugal	0.010	0.096	0.177	0.093	1.374	0.610	-0.016	0.868

Average	0.013	0.122	0.088	0.058	2.217	1.041

Source: Aydoğan and Gürsoy (2000, p. 14).

Table 3.2: The Performance of the Financial Sector's Main Branches in the ASE, during the Financial Crisis

The following table demonstrates that the financial sector in the ASE was adversely impacted by the 2007/8 financial crisis. For instance, the table showed that the banking sector's index declined from 55319.5 in 2008 to 3646.76 in 2009, with total losses amounting JOD 1672.74 million. During the period Jan/2008-Dec/2009 this index is followed by the real estate index. The index of this sector slumped from 8017.30 to 3131.03 points, with a total loss 4886.27. Finally, the index of the insurance sector recorded a total loss of 832.03 points. Specifically, it is decreased from 3670 to 2838 points, during the period Jan/2008-Dec/2009.

Month	Banking Sec Index	Insurance Sec Index	Real Estate Sec Index
Jan/2008	5320	3670	8017
Feb/2008	5395	3644	78851
Mar/2008	4996	3583	8002

Apr/2008	5028	3613	8282
May/2008	5182	3771	8564
Jun/2008	5578	4179	8319
Jul/2008	5748	4012	8078
Aug/2008	5564	4001	7986
Sep/2008	5287	3930	7000
Oct/2008	4784	3461	5480
Nov/2008	4217	2237	4420
Dec/2008	4196	3231	3879
Jan/2009	4064	3010	4017
Feb/2009	3852	3097	4260
Mar/2009	3712	3126	4551
Apr/2009	3761	3214	4504
May/2009	3989	3237	4472
Jun/2009	3880	3077	3958

Jul/2009	3701	2870	3601
Aug/2009	3702	2755	3257
Sep/2009	3787	2939	4028
Oct/2009	3787	2862	3508
Nov/2009	3689	2861	3338
Dec/2009	3647	2838	3131

Source: Alnajjar, et al. (2010 p.06).

Table 3.3: The Foreign Investment in the Amman Stock Exchange

The following table reports that the 2007/8 financial crisis was significantly impacted the performance of the ASE, through influencing the amounts of foreign investments. The following statistics showed that the total amount of purchasing contracts by foreign investors decreased from JOD 2.804 to 2.136 million, during the period 2007-9. Likewise, the total amounts of selling contracts plunged from JOD 2.235 to 2.139 million. The net investment of foreign investors in the ASE slumped from JOD 569 to 32 million, over the period 2007-9.

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Year	Purchase	Selling	Net investment	Market value%
2006	1.995	1.730	265	49
2007	2.804	2.235	569	47
2008	4.219	3.910	309	46
2009	2.136	2.139	32	49

Source: Al-Halalmeh and Sayah (2010, p. 37).

Table 3.4: The Effect of the Financial Crisis on the Performance of the Jordanian Banking Sector

The following table shows the impact of the financial crisis on the performance of the Jordanian banking sector. To define the crisis impact on the financial performance "Rank" of the Jordanian commercial and Islamic banks, (Zeitun and Benjelloun, 2013) used the Anova analysis test. As a result, the following statistics prove that the financial crisis was significantly impacted the Jordanian banking sector. In the pre-crisis period the table shows that the mean rank of Jordanian banks was 44. However, this rank decreased to 38 points, during the crisis and to 27 after the crisis period. In other word, results from Anova test proved that the global financial crisis resulted in deteriorating the rank of Jordanian banking sector.

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	Period	Mean Rank
VRS Output	Before	44
	During	38
	After	27
VRS Input	Before	48
	During	37
	After	25

Source: Zeitun and Benjelloun (2013, p. 15).

Appendices

Appendix C

Previous Studies, Key's Variables and Results

Table 3.5: The Relationship of the Interest and Inflation Rates along with the Market's Performance

The following table presents a summary of the previous related studies, which are focused on the relationships of the Interest and the Inflation Rates along with the performance of the stock Markets.

No.	Authors	Year of Study	Variables	Results
1	Zafar	2013	Interest rate market performance as measured by market capitalization.	Negative relationship.
2	Al-Mukit	2012	Weighted average interest rates on saving deposit and market performance as measured by stock index.	Negative relationship.
3	Thang	2009	Interest rate and market performance as	Negative relationship.

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			measured by stock index.	
4	Ali	2014	Interest rate and Market Performance.	Negative relationship.
5	El-Nader and Al-Raimony	2012	Weighted average interest rate on loans and advances and stock returns.	Negative relationship.
6	Aurangzeb	2012	Interest rate and inflation rate along with the market's performance.	Negative relationship.
7	Richard, Adeku-nie and Ojodu	2012	Interest rate and capital market growth.	Negative relationship.
8	Khrawish, *et al*	2010	Interest rate and market capitalization rate.	Positive relationship.
9	Sukruoglu and Nalin	2014	Macroeconomic indicators and market development.	
10	Kemboi and Ta-rus	2012	Macroeconomic and market develop-ment (MC).	No relationship between the study variables.
11	Cherif and Gaz-dar	2010	Interest rate, saving rate, stock market liquidity and market development (MC)	Significant relationship.

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12	Kaehler, et al	2013	Macroeconomic variables and market development.	Significant relationship between interest rate and market development.
13	Ologunde, et al	2006	Market capitalization and prevailing interest rate.	Positive relationship.
14	Amador, et al	2013	Monetary policy and stock market liquidity (trading activity)	Positive relationship.
15	Chordia, et al	2010	Interest rate and Market liquidity.	Positive relationship.
16	Wong and Fung	2002	Interest rate and market liquidity.	Significant relationship
17	Al-Shubiri	2010	Lending interest rate and stock prices.	Negative relationship.
18	Ali	2016	M/BV ratio and Market's liquidity as measured by value traded & turnover ratio	Insignificant correlation

Source: The researcher (2015).

Appendices

Table 3.6: The Relationship of the Market and the Book Values

The following table presents a summary of the previous related studies, which are focused on the relationship between the Market and the Book Values.

No.	Authors	Year of Study	Variables	Results
1	Aydogan and Gursoy	2000	M/BV ratio and stock returns.	Negative relation-ship.
2	Chan, et al	1999	B/MV and stock returns.	Positive relationship.
3	Fang, et al	2009	Stock liquidity and firm's performance as measured by M/BV ratio.	Positive relationship.
4	Malhotra and Tandon	2013	Book value and stock prices.	Positive relationship.
5	Srinivasan	2012	Book value per share and market prices.	Positive relationship.
6	Agrawal, et al	1996	M/BV ratio and economic regime shifts.	Significant relation-ship.

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7	Al-Deehani	2005	M/BV and stock prices.	Significant relation-ship.
8	Sharma	2011	Market prices and book per share.	Positive.
9	Al-Mumani	(2014)	Book value per share and stock prices.	Significant relation-ship.
10	Landskroner, et al	2006	M/BV ratio and market risk.	Significant relation-ship.
11	Al-Mwalla	2010	Stock returns and B/MV ratio.	Positive relationship.
12	Makrani and Abdi	2014	Book value and stock returns.	Significant relation-ship.
13	Pontif and Schall	199	B/MV and stock returns.	
14	Lewellen	1999	B/MV and future returns.	Low relationship.

Source: The researcher (2015).

Appendices

Table 3.7: The Relationship of the Interest Rates along with the Banks' Performance

The following table presents a summary of the previous related studies, which are focused on the relationship of the Interest Rates along with the Banks' Performance.

No.	Authors	Year of Study	Variables	Results
1	Okoye and Eze	2013	Lending rate, monetary policy interest rate and banks' performance as measured by banks' earning.	Positive relationship.
2	Enyioko	2012	Interest rate policies and banks performance.	No significant relationship.
3	Nwakanma	2014	Interest rate regime, lending interest rate, deposit interest rate banks' lending behaviour.	Significant relationship.
4	Irungu	2013	Interest rate spread, banks' performance as measured by ROA	Positive relationship.

5	Peng, et al	2003	Interest rate spread and banks performance.	Negative relationship
6	Olokoyo	2011	Lending interest rate, deposit volume and banks' lending behaviour.	Significant relationship in the long run
7	Frederick (2014)	2014	Net interest margin and banks performance as measured by ROA and ROE.	Positive relationship between net interest margin and banks' performance as a proxy for ROA.

Source: The researcher (2015).

Table 3.8: The Relationship of the Interest and the Inflation Rates along with the Banks' Profitability

The following table presents a summary of the previous related studies, which are focused on the relationship of the Interest and the Inflation Rates along with the profitability of banks.

No.	Authors	Year of Study	Variables	Results

Appendices

1	Riaz	2013	Macroeconomic indicators and banks' profitability as measured by ROE and ROA	Positive relationship between interest rate and ROE, while it is negatively associated with ROA
2	Bosede, et al	2013	Deposit interest rate, lending rate and banks' profitability as measured by deposit to lending ratio.	Significant relationship.
3	Ogunbiy & Ihejirika	2014	Real interest rate, lending rate, interest rate on saving deposit and banks' profitability as measured by ROA and ROE.	Negative relationship.
4	Samy and Omran	2008	Lending rate and banks' profitability.	Significant relationship.
5	John	2013	Discount rate and banks'	Low correlation.

			profitability as measured by ROAE and ROAA.	
6	Agama	2014	Real interest rate, real market interest rate and banks profitability.	Positive relationship between real interest rate and banks' profitability, while, profitability is negatively related to real market interest rate.
7	Deger and Adem	2011	Real interest rate and banks' profitability as measured by ROA and ROE.	Positive.
8	Khan, et al	2011	Net interest margin, non-interest income and banks' profitability as measured by net profit.	Significant relationship.
9	Alper and Anbar	2011	Real interest rate, Inflation, non-interest income	Positive relationship between the interest and the banks' profitability,

			and banks' profitability as measured by ROA and ROE.	while a non-significant correlation between the inflation and the profit-ability of banks.

Source: The researcher (2015).

Table 3.9: The Relationship of the Interest and the Inflation Rates along with the Banks' Liquidity

The following table presents a summary of the previous related studies, which are focused on the relationship of the Interest and the Inflation Rates along with the liquidity of banks.

Panel E: This table is constructed to provide empirical studies on the relationships of interest rates along with Banks' Liquidity.				
No.	**Authors**	**Year of Study**	**Variables**	**Results**
1	Al-Ali and Kassem	2013	Volatility in weighted average deposit interest rate and time and saving deposits.	Positive relationship.

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2	Malik and Rafique	2013	Monetary interest rate, inflation, and banks' liquidity as measured by liquid assets to total assets and advances to total assets.	Positive relationship between the interest rate and the banks between the inflation and the liquidity of banks.
3	Hackethal, et al	2010	Interest rate and liquidity creation.	Significant relationship.
4	Vodova	2013	Interest rate on loans, monetary policy interest rate and rate on interbank transactions, and banks' liquidity as a proxy for liquid assets/total assets, liquid assets/ deposit short term borrowing and liquid assets/total deposit.	Positive relationship between interest rate on loans and banks' liquidity, while, banks' liquidity negatively affected by monetary policy rate and rate on interbank transactions.
5	Subedi and	2013	Short term interest rate and	Negative relationship.

	Neupane		banks' liquidity.	
6	Vodova	2011	Interest rate on loans, inflation and rate on interbank transactions, and banks' liquidity as a proxy for liquid assets/ deposit + short term borrowing, loans/ total assets, loans/ total deposits +short term financing.	Positive relationship.
7	Vodova	2011	Interest rate on loans, inflation interest rate on deposits, monetary policy rate and rate on interbank transactions, and banks' liquidity as a proxy for liquid assets/ deposit +short term borrowing, loans/ total assets, loans/ total deposits +short term financ-	No relationship.

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			ing.	
8	Chen and Phuong	2014	Monetary policy and level of excess liquidity.	Negative relationship.
9	Bahati and Dezoysa	2013	Discount rate and banks' liquidity.	Negative relationship.
10	Aikaeli	2006	Volatility in interest rate on loans, banks borrowing rate and banks' liquidity.	Positive relationship.
11	Kanj and Khoury	2013	Interest rate and banks deposit.	Significant relationship between interest rate and total non-resident deposits.

Source: The researcher (2015).

Appendices

Table 3.10: The Determinants of Investors' Decisions and Saving Behaviours

The following table presents a summary of the previous related studies, which are focused on identifying the Determinants of Investors' Decisions and Saving Behaviours.

No.	Authors	Year of Study	Variables	Results
1	Ojeaga and Odejimi	2014	Fixed interest rate and customer saving behaviour as measured by banks' deposit.	Positive relationship.
2	El-Seoud	2014	Deposit interest rate and private saving behaviour.	Positive relationship.
3	Acosta and Loza	2005	Exchange rate, inflation rate, trade liberalization and investment decisions.	Significant relationship.
4	Kaberuka and Namubiru	2014	Deposit interest rate and saving behaviour.	Positive relationship.

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5	Ozcan, et al	2012	Saving deposit interest rate and private saving behaviour.	Positive relationship.
6	Ozcan, e al	2003	Saving deposit interest rate and private saving behaviour.	Positive relationship.
7	Agrawals, Sahoo, and Dash	2008	Interest rate on saving deposits and saving behaviour.	Positive relationship.
8	Jongwanich	2010	Real interest rate and saving behaviour.	Positive relationship.
9	Hebbel, et al	1992	Time deposit interest rate and saving behaviour.	Negative relationship.
10	Liberda and Tokarski	1999	Budget deficit, personal income taxation and saving behaviour.	Negative relationship.
11	Shaban & Al-Zubi	2014	M/BV & P/E ratio along	Significant relation-

			with Investors Decisions.	ship.

Source: The researcher (2015).

Appendices

Appendix D

The Study Variables and Data Sources

Table 4.1: Data Sources

The following table shows the sources of the data, which are used to achieve the study's aim and objectives. The table also illustrates the way of constructing the dummy variable that is used to identify the relationship between the liquidity of the Jordanian commercial banks and the Amman Stock Exchange.

Explanatory Variables	**Data's Source**
Weighted average time deposit interest rate and Inflation.	The official site of the CBJ.
M/BV and the P/E Ratios.	The official site of the ASE.
Dummy	This variable is created by relying on the study's data. To build this dummy, the

	study used the Pearson correlation test between the measures that capture the liquidity of banks and the stock market. The results showed that the strongest correlation is found to be between the TLTD as a measure for banks' liquidity and the TV as measure for the liquidity of the ASE. Thereafter, through STATA the study generated a dummy that takes 1 if the relationship between the liquidity of banks along with the market liquidity is positive, while it takes 0 if this relationship is negative. However, to allocate these values the study calculated the average of these measures and then through STATA, the following statistical commands are formulated: **Replace DUM= 1 if TLTD >= 0.59 & TV >= 2.91** **Replace DUM= 1 if TLTD <= 0.59 & TV <= 2.91** **Replace DUM= 0 if TLTD <= 0.59 & TV >= 2.91** **Replace DUM= 0 if TLTD >= 0.59 & TV <= 2.91**
Dependent Variables	
TOR	The official site of ASE.
TV	The official site of ASE.

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VT	The official site of ASE.
NOT	The official site of ASE.
TDTA	The official site of CBJ.
TLTD	The official site of CBJ.
LATA	Jordanian commercial banks and the official site of CBJ.
LATD	Jordanian commercial banks & the official site of CBJ.
The set of variables that extends from **1** to **4** are utilised to capture the liquidity of ASE and from **5** to **8** used to measure the liquidity of the Jordanian commercial banks.	

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Table 4.2: List of Variables

The following table shows the list of the variables, which are used in this research as well as the variables' references.

Explanatory Variables	**Reference**
Weighted Average Time Deposit Interest Rate and the Consumer Price Index "Inflation".	Al-Ali and Kassem (2013): investigate the impact of the fluctuation in the weighted average deposit interest rate on the liquidity of Syrian banks as measured by saving and time deposits. AL-Majali & Al-Assaf (2014) explored the relationship between the weighted average time deposit interest rates & the performance of the ASE as captured by the stock index. Malik and Rafique (2013) found a negative correlation between the inflation and the liquidity of banks.
Average Market-to-Book Value Ratio and the Price to Earnings Ratio.	Aydogan and Gursoy (2000): examine the relationship between M/BV ratio and stock returns. Shaban & Al-Zubi (2014) finds a significant correlation between the M/BV and P/E ratios along with the investment decisions of the ASE. Yamin & Ali (2014) find that M/BV and P/E ratios are significantly impacting investors' decisions. However, Ali (2016) revealed an insignificant correlation between M/BV ratio

	along with banks' liquidity. Helfert (2000, p.387), Finn (2006) find these ratios as effectives tool for the process of decision-making. Al-Deehani (2005), examined the relationship between M/BV and stock prices.
Dummy (ASEL, JCBL)	The dummy variable relates to the liquidity of the Jordanian commercial banks and the Amman Stock Exchange.
Dependent Variables	**Reference**
Turnover Ratio	Amador, et al. (2013) investigates the effect of Monetary policy on stock market liquidity as measured by the turnover ratio. Kemboi and Tarus (2012) used this ratio to capture the stock market's liquidity. Adenuga (2010) used it to measure the liquidity of Nigerian stock market. Also see (Sukruoglu & Nalin, 2012, Levine & Zervos, 1998).
Trading Volume	Wyss (2004), Alabed & Al-Khouri, 2008) employed this variable to measure the liquidity of stock markets.

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Value Traded	Ali (2016), Amador, et al. (2013) utilised this factor to gauge the stock market's liquidity. Kemboi and Tarus (2012): examined the relationship between stock market liquidity as measured by traded value and turnover ratio and the development of stock markets. See also (Alabed & Al-Khouri, 2008).
Number of Transactions.	Wyss (2004) used this variable to measure the liquidity of stock markets.
Total Deposit Ratio	According to Uyen (2011), this ratio is considered as the most common ratio for measuring the position of banks' liquidity.
Total Loans to customers deposits	According to an IMF published report (April/2000) this ratio is a valid indicator for measuring banks' liquidity. Uyen (2011) mentioned that this ratio is considered as the most common ratio for measuring the position of banks' liquidity. Ongore & Kusa (2013) used this ratio to capture the performance of Kenyan commercial banks.

Liquid assets to total assets	According to an IMF published report (April/2000) this is a valid ratio to measure the liquidity of banks. Vodova (2013) was previously used this ratio to measure banks' liquidity. See also, Malik & Rafique (2013)
Liquid assets to total deposits	Vodova (2013) used this ratio to measure banks' liquidity.

Source: the researcher (2015).

Appendices

Appendix E

Statistical Charts and Graphs from Correlation, Descriptive & ADF Tests

First: Correlation Matrix

Table 5.1: Pearson Correlation Test

The study constructed a dummy variable to identify the fundamental relationship between the liquidity of the ASE and the liquidity of the Jordanian commercial banks. The following matrix shows that the strongest relationship is found to be between the trading volume as a measure for ASE's liquidity and the TLTD ratio as a measure for the liquidity of banks.

	TLTD	**LATA**	**LATD**	**TDTA**	**TOR**	**TV**	**VT**	**NOT**
TLTD	1.000							
LATA	-0.0596	1.000						
LATD	0.1349	0.8203	1.000					
TDTA	-	1.000	0.8203	1.000				

	0.0596							
TOR	0.4863	-0.2388	0.1165	-0.2388	1.000			
TV	0.7659	-0.3682	0.0273	-0.3682	0.8375	1.000		
VT	0.2232	-0.2581	0.0232	-0.2581	0.8717	0.6491	1.000	
NOT	0.3472	-0.3464	0.0548	-0.3464	0.9179	0.7912	0.9476	1.000

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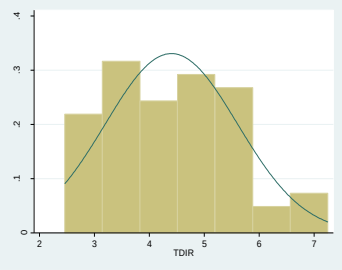
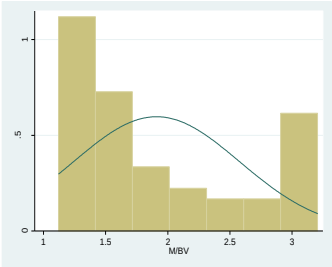
Second: Graphs from the Summary Statistics Test (1-13)

The following charts are generated before calculating the study Means, Variance, Std, Skewness and Kurtosis in order to know whether or not the used series is following the normal distribution.

Chart (1): TDIR **Chart (2): M/BV** **Chart (3): TDTA**





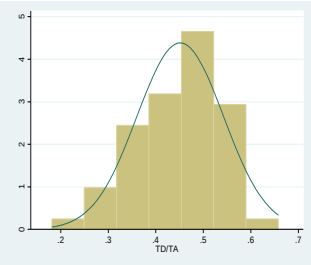
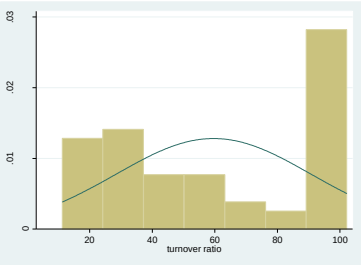
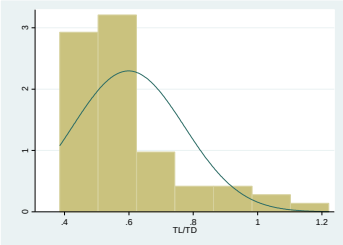


Chart (4): TOR **Chart (5): TLTD** **Chart (6): LATA**





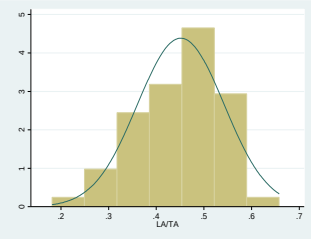


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Chart (7): LATD

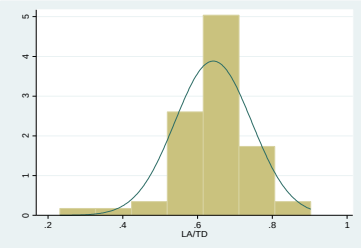


Chart (8): TV

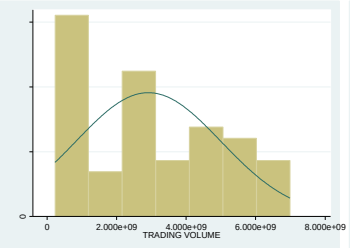


Chart (9): VT

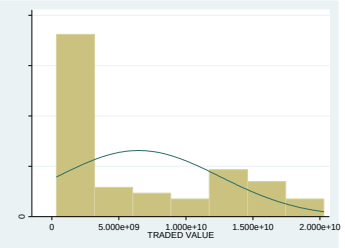


Chart (2): DUM_ASEL/JCBL

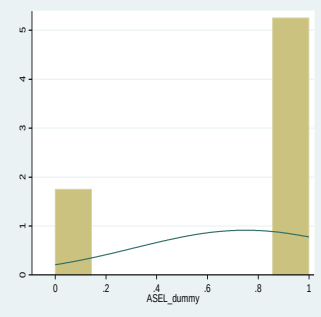


Chart (3): NOT

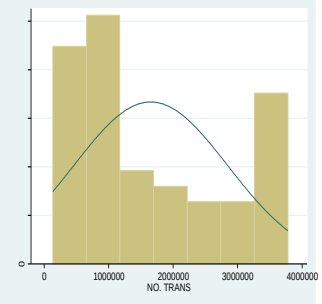


Chart (12): Inflation

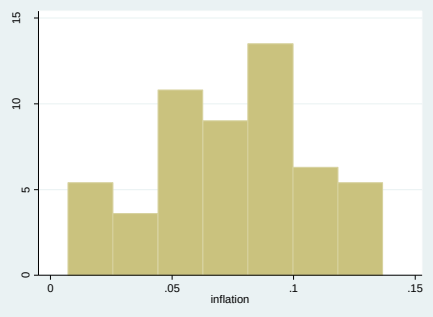
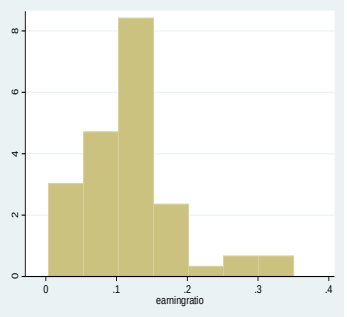


Chart (13): P/E Ratio



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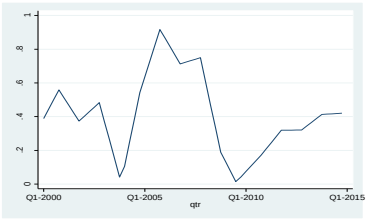
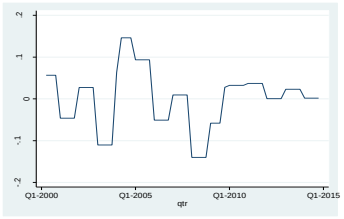
Third: Graphs from the ADF Tests (1-26)

Before running the ADF in order to define whether the used series has a trend or not, I created line graphs to the series variables. Thus, the following graphs illustrate the trends of the used series variables before converting them into the first difference. The graphs also describe the used variables after converting them into the first difference.

Graph (1) M/BV



Graph (2) D_M/BV



Graph (3) TDIR

Graph (4) D_ TDIR

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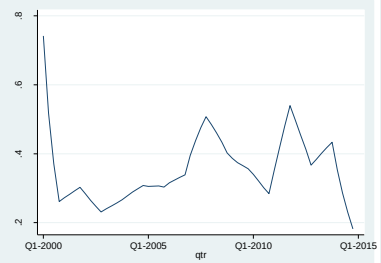
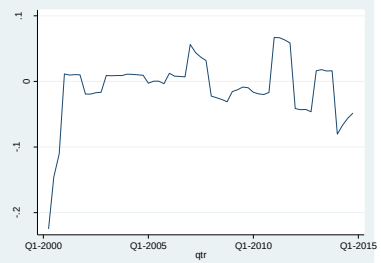
Graph (5) TDTA

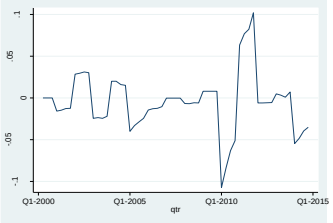


Graph (6) D_TDTA

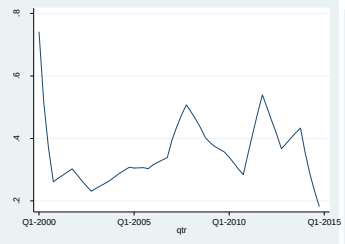


Graph (7) TLTD

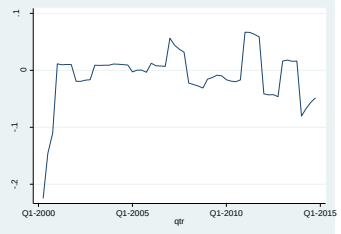
Graph (8) D_TLTD



Graph (9) LATA



Graph (10) D_LATA



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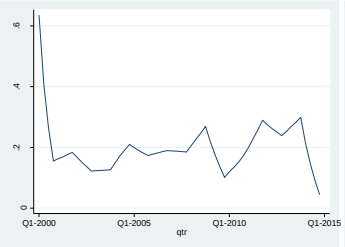
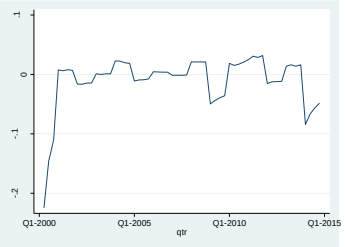
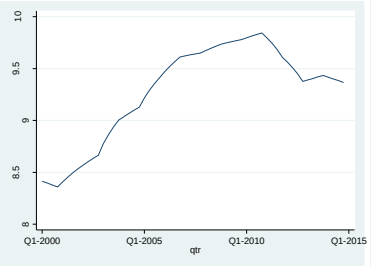
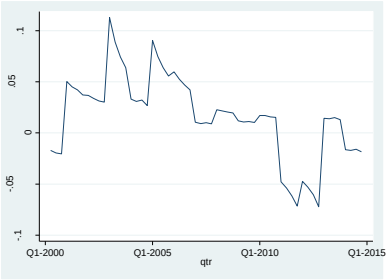
Graph (11) LATD **Graph (12) D_LATD**



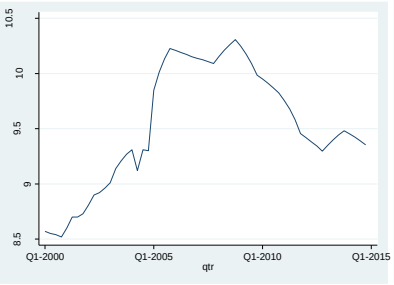


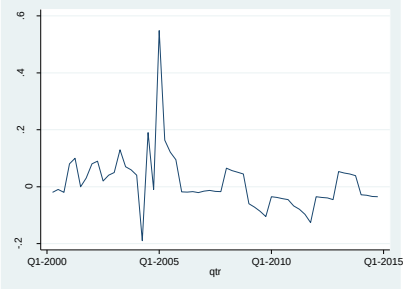
Graph (13) TV **Graph (14) D_ TV**





Graph (15) VT **Graph (16) D_ VT**





Graph (17) NOT **Graph (18) D_ NOT**

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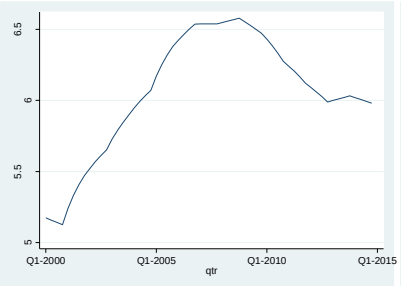
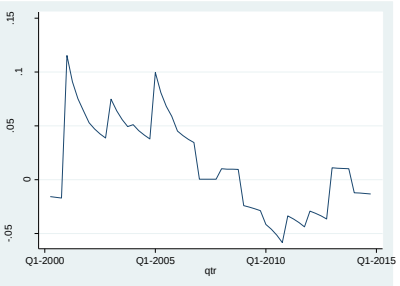
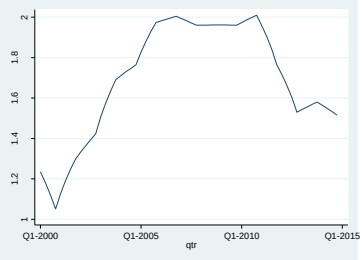


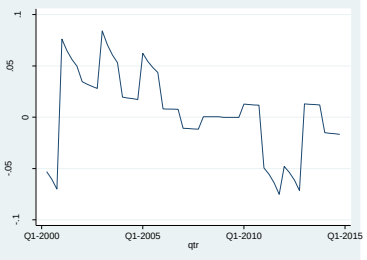
Graph (19) TOR



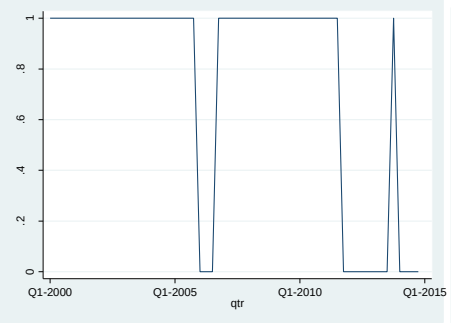
Graph (20) D_ TOR



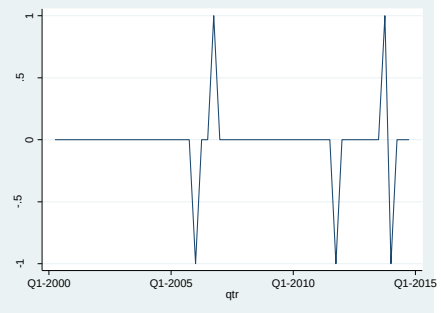
Graph (21) Dummy



Graph (22) D_ Dummy



Graph (23) Inflation



Graph (24) D_ Inflation

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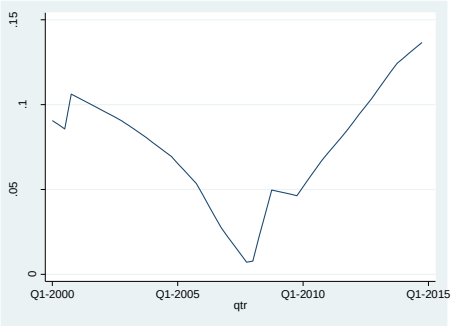
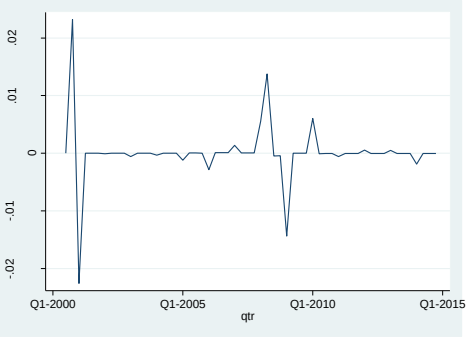
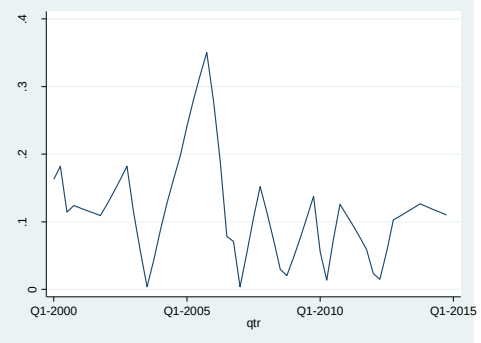
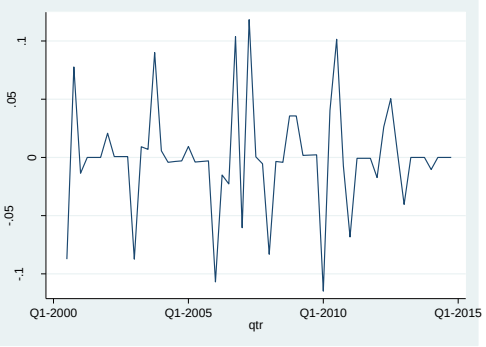


Graph (25) P/E Ratio



Graph (26) D_ P/E Ratio





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Appendix F

Post-estimation Tests from Linear Multiple Regression Tests

Table 5.1.1: VIF Test

The following table describes the results of the Multicollinearity test, which is used to describe the status of collinearity among the explanatory variables.

After regressing the Liquidity of banks on the M/BV ratio, TDIR, P/E ratio, CPI and the dummy, the test of Multicollinearity is applied in order to check whether or not there is a strong relationship among the explanatory variables. Thus, since, all the variables have a VIF less than 4; the following results confirmed that there is no autocorrelation between the explanatory variables.

Variable	VIF	1/VIF
D.M/BV	1.32	0.755
D.TDIR	1.21	0.826
P/E Ratio	1.49	0.671

CPI	1.04	0.964
D. ASEL_DUM / D. JCBL_DUM	1.10	0.904
Mean VIF	1.23	

Table 5.1.2: Shapir-Wilk Test

The following table is created to examine if the residuals are normally distributed or not? As presented below, results from the Shapir-Wilk tests rejected the null hypothesis, which assumes that the residuals are normally distributed. The results are presented as shown below:

Residual	**Dependent**	**Prob. > Z**	H_1: hypothesis assumes that the residuals are normally distributed.
R1	TLTD	0.0077	Rejected
R2	LATA	0.0208	Rejected
R3	LATD	0.6513	Accepted
R4	TDTA	0.0208	Rejected

R5	TOR	0.0298	Rejected
R6	TV	0.0089	Rejected
R7	VT	0.0126	Rejected
R8	NOT	0.0052	Rejected

Table 5.1.3: Breusch-Pagan/ Cook-Weisberg Test

Table 10: The following table demonstrates the results from the heteroscedacticity tests. This test is applied in order to check whether the data are heteroscedasticity or Homoscedasticity?

Dependent	**Prob. > Z**	**H_0: The variance is constant**
TLTD	0.5613	Accepted
LATA	0.6082	Accepted
LATD	0.7549	Accepted
TDTA	0.6082	Accepted
TOR	0.5375	Accepted

TV	0.3651	Accepted
VT	0.7113	Accepted
NOT	0.4056	Accepted
M/BV Ratio	0.7230	Accepted
TDIR	0.4069	Accepted
Inflation Rate	0.6575	Accepted
ASEL_DUM/ JCBL_DUM	0.3099	Accepted

Table 5.1.4: Studies with High or Low R^2 and Standard Error

Study	**R^2**	**Standard Error**	**P-Value**
Enyioko (2012)	Low	High	High
Kemboi and Tarus (2012)	Low	High	High
Alper and Anbar (2011)	Low	High	High

Ali (2016)	Low	High	High
Vodova (2011a)	Low	High	High
Vodova (2011b)	High	Low	Low
Vodova (2013)	High	Low	Low
Al-Ali and Kassel (2013)	High	Low	Low
Malik and Rafique (2013)	High	Low	Low
Yamin and Ali (2014)	High	Low	Low
Shaban and Al-Zubi (2014)	High	Low	Low

Table 5.1.5: Robustness Regression Test

The following tables shows the results of the robust standard error tests, which are applied in order to check the relationship of market fundamentals along with the liquidity of the Jordanian commercial banks as a proxy for the decisions of Jordanian investors. Consequently, the results showed that the p values are high and there is no relationship between the examined variables due to the high values of the standard error.

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Jordanian Commercial Banks' Liquidity										
Banks' Liquidity	**P-Value**					**Robust Std. Error**				
	TDIR	**M/BV**	**P/E**	**CPI**	**DUM**	**TDIR**	**M/BV**	**P/E**	**CPI**	**DUM**
TLTD	**0.42**	**0.39**	**0.80**	**0.81**	**0.80**	**0.02**	**0.07**	**0.14**	**0.62**	**0.02**
LATA	**0.03**	**0.45**	**0.46**	**0.00**	**0.74**	**0.03**	**0.09**	**0.20**	**0.84**	**0.02**
LATD	**0.03**	**0.33**	**0.51**	**0.83**	**0.98**	**0.03**	**0.10**	**0.18**	**1.16**	**0.02**
TDTA	**0.03**	**0.45**	**0.46**	**0.00**	**0.74**	**0.03**	**0.09**	**0.20**	**0.84**	**0.02**
R-Squared	**TLTD**		**LATA**		**LATD**		**TDTA**			
	0.03		**0.12**		**0.10**		**0.12**			

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Table 5.1.6: Robustness Regression Test

The following tables shows the results of the robust standard error tests, which are applied in order to check the relationship of market fundamentals along with the liquidity of the Amman Stock Exchange as a proxy for the decisions of Jordanian investors. Consequently, the results showed that the p values are high and there is no relationship between the examined variables due to the high values of the standard error.

Amman Stock Exchange's Liquidity										
	P-Value					**Robust Std. Error**				
ASE' Li-quidity	**TDIR**	**M/BV**	**P/E**	**CPI**	**DUM**	**TDIR**	**M/BV**	**P/E**	**CPI**	**DUM**
TOR	**0.41**	**0.02**	**0.23**	**0.00**	**0.33**	**0.02**	**0.07**	**0.12**	**0.65**	**0.01**
VT	**0.93**	**0.85**	**0.39**	**0.09**	**0.22**	**0.04**	**0.22**	**0.24**	**1.84**	**0.02**
TV	**0.18**	**0.02**	**0.74**	**0.00**	**0.35**	**0.02**	**0.07**	**0.12**	**0.96**	**0.01**
NOT	**0.55**	**0.27**	**0.88**	**0.00**	**0.13**	**0.02**	**0.08**	**0.13**	**0.95**	**0.00**

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R-Squared	TOR	VT	TV	NOT
	0.26	0.05	0.22	0.28

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Appendix G

Post-estimation Tests from VECM and VAR Models

Table 5.2.1: VAR Post-estimation Tests for the TLTD Ratio "Jarque-Bera Test"

The following table examines if the residuals are normally distributed or not? Results from the Jarque-Bera test rejected the hypothesis, which assumes that the residuals are normally distributed.

Equation	Chi2	df	Prob.>chi2
TLTD	23.037	2	0.000
TDIR	2.123	2	0.345
M/BV	8.377	2	0.015
Inflation Rate	61.504	2	0.000
P/E Ratio	3.065	2	0.215
ASEL_DUM	29.756	2	0.000
All	127.863	12	0.000

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Table 5.2.2: VAR Post-estimation Tests for the TLTD Ratio "Lagrange-Multiplier Test"

This table demonstrates results from Lagrange-Multiplier test that is applied in order to examine the status of autocorrelation at lags among the variables. Consequently, the null hypothesis was confirmed. Meaning that there is no autocorrelation between the examined variables and the variables did not present any autocorrelation at the first, second or the third lag.

Lag	Chi2	df	Prob.>chi2
1	49.713	36	0.063
2	60.064	36	0.070
3	21.860	36	0.969

Table 5.2.3: VEC Model Post-estimation Tests for the LATA Ratio "Wald Test"

This table is constructed as a VECM post-estimation test in order to examine whether or not the following variables are correlated with Banks's liquidity on the short-term. To achieve that I tested a null hypothesis signifies that there is a short-run causality running from the following independent variables to the LATA. Consequently, the results proved that there is a short-run

causality running from the fluctuations in the TDIR, M/BV and P/E ratio to the liquidity of Jordanian commercial banks as measured by the liquid assets to total assets. However, the volatility in the inflation rate is insignificantly impacting the decisions of Jordanian investors in the short-run.

Variable	Chi2	Prob >chi2
M/BV	72.79	0.000
TDIR	31.57	0.001
Inflation Rate	19.03	0.087
P/E Ratio	25.49	0.003
ASEL_DUM	8.53	0.742

Table 5.2.4: VEC Model Post-estimation Tests for the LATA Ratio "Jarque-Bera Test"

The following table tries to examine if the residuals are normally distributed or not? Results from the Jarque-Bera tests rejected a null hypothesis assumes that the residuals are normally distributed.

Equation	**Chi2**	**df**	**Prob>chi2**
D. LATA	5.473	2	0.064

D_ TDIR	1.539	2	0.461
D_ M/BV	37.370	2	0.000
D_Inflation Rate	4.076	2	0.130
D_P/E Ratio	1.640	2	0.440
D_ASEL_DUM	144.712	2	0.000
All	194.810	12	0.000

Table 5.2.5: VEC Model Post-estimation Tests for LATA Ratio "Lagrange Multiplier Test"

This table demonstrates results from Lagrange-Multiplier Test that is applied to test the status of autocorrelation at lags among the variables. Consequently, the null hypothesis was confirmed. Meaning that there is no autocorrelation between the examined variables as well as the variables did not present any autocorrelation at the first or the second lag.

Lag	**Chi2**	**df**	**Prob>chi2**
1	36.130	36	0.462
2	22.157	36	0.965

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Table 5.2.6: VEC Model Post-estimation Tests for LATD Ratio "Wald Test"

This table is constructed as a VECM post-estimation test to examine whether or not the following variables are correlated with Banks's liquidity on the short-term. To achieve that I tested a null hypothesis signifies that there is a short-run causality running from the following independent variables to the LATD. Consequently, the results showed that there is a short-run causality running from the fluctuations in the TDIR and the M/BV ratio to the liquidity of banks as measured by the liquid assets to total deposits.

Variable	Chi2	Prob> chi2
M/BV	79.33	0.000
TDIR	31.48	0.001
Inflation Rate	21.31	0.046
P/E Ratio	17.12	0.145
ASEL_DUM	10.97	0.533

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Table 5.2.7: VEC Model Post-estimation Tests for LATD Ratio "Jarque-Bera Test"

The following table tries to examine if the residuals are normally distributed or not? Results from the Jarque-Bera tests rejected a null hypothesis assumes that the residuals are normally distributed.

Equation	Chi2	df	Prob>chi2
D. LATD	30.340	2	0.000
D_ TDIR	1.319	2	0.000
D_ M/BV	23.241	2	0.517
D_Inflation Rate	3.689	2	0.158
P/E Ratio	4.456	2	0.107
D_ASE_DUM	112.971	2	0.000
All	176.015	12	0.000

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Table 5.2.8: VEC Model Post-estimation Tests for LATD Ratio "Lagrange-Multiplier Test"

This table demonstrates results from Lagrange-Multiplier Test that is applied in order to examine the status of autocorrelation at lag among the variables. As a result, the null hypothesis was confirmed. Meaning that there is no autocorrelation between the examined variables as well as the variables did not present any autocorrelation at the first or the second lag.

Lag	Chi2	df	Prob>chi2
1	37.536	36	0.398
2	24.722	36	0.922

Table 5.2.9: VEC Model Post-estimation Tests for TDTA Ratio "Wald Test"

This table is constructed as a VECM post-estimation test to examine whether or not the following variables are correlated with Banks's liquidity on the short-term. To achieve that I tested a null hypothesis signifies that there is a short-run causality running from the following independent variables to the TDTA. Consequently, the results proved that there is a short-run causality running from the fluctuations in the TDIR, M/BV ratio, and P/E ratio to the liquidity of Jordanian commercial banks as measured

by the total deposits to total assets. However, the volatility in the inflation rate is insignificantly impacting the decisions of Jordanian investors in the short-run.

Variable	Chi2	Prob >chi2
M/BV	72.79	0.000
TDIR	31.57	0.001
Inflation Rate	19.03	0.087
P/E Ratio	25.49	0.003
ASEL_DUM	8.53	0.742

Table 5.2.10: VEC Model Post-estimation Tests for TDTA Ratio "Jarque-Bera Test"

The following table tries to examine if the residuals are normally distributed or not? Results from the Jarque-Bera tests rejected a null hypothesis assumes that the residuals are normally distributed.

Equation	**Chi2**	**df**	**Prob>chi2**
D. TDTA	5.473	2	0.064

D_ TDIR	1.539	2	0.461
D_ M/BV	37.370	2	0.000
D_Inflation Rate	4.076	2	0.130
D_P/E Ratio	1.640	2	0.440
D_ASEL_DUM	144.712	2	0.000
All	194.810	12	0.000

Table 5.2.11: VEC Model Post-estimation Tests for TDTA Ratio "Lagrange-Multiplier Test"

This table demonstrates results from Lagrange-Multiplier Test that is applied to test the status of autocorrelation at lags among the variables. Consequently, the null hypothesis was confirmed. Meaning that there is no autocorrelation between the examined variables as well as the variables did not present any autocorrelation at the first or the second lag.

Lag	**Chi2**	**df**	**Prob>chi2**
1	36.130	36	0.462
2	22.157	36	0.965

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Table 5.3.1: VEC Model Post-estimation Tests for TOR "Wald Test"

This table is constructed as a VECM post-estimation test in order to examine whether or not the following variables are correlated with the ASE's liquidity on the short run. To achieve that I tested a null hypothesis signifies that there is a short-run causality running from the following independent variables to the Turnover Ratio. Consequently, the results proved that there is a short run causality running from the fluctuations in the TDIR, M/BV ratio, P/E ratio and the rate of inflation along with the market's liquidity. By contrast, the findings showed that the liquidity of the Jordanian commercial banks as measured by the dummy is not co-integrated with the liquidity of the ASE as measured by turnover ratio.

Variable	Chi2	Prob.>chi2
M/BV	86.38	0.000
TDIR	41.70	0.000
Inflation Rate	49.03	0.000
P/E Ratio	35.32	0.001
JCBL_DUM	9.67	0.645

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Table 5.3.2: VEC Model Post-estimation Tests for TOR "Jarque-Bera Test"

The following table tries to examine if the residuals are normally distributed or not? Results from Jarque-Bera test rejected a null hypothesis assumes that the residuals are normally distributed.

Equation	Chi2	df	Prob.>chi2
D. Turnover Ratio	5.275	2	0.071
D_ TDIR	1.845	2	0.397
D_ M/BV Ratio	33.607	2	0.000
D_Inflation Rate	3.744	2	0.153
P/E Ratio	1.986	2	0.370
D_JCBL_DUM	85.996	2	0.000
All	132.454	12	0.000

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Table 5.3.3: VEC Model Post-estimation Tests for TOR "Lagrange-Multiplier Test"

This table demonstrates the results of the Lagrange-Multiplier test, which is applied in order to examine if there is no autocorrelation at the lags of order one and two. Consequently, the null hypothesis was confirmed. Meaning that there is no autocorrelation between the examined variables as well as the variables did not present any autocorrelation at lag one or lag two.

Lag	Chi2	df	Prob.>chi2
1	35.878	36	0.474
2	28.835	36	0.796

Table 5.3.4: VEC Model Post-estimation Tests for TV "Wald Test"

This table is constructed as a VECM post-estimation test to examine whether or not the following variables are correlated with ASE's liquidity on the short run. To achieve that I tested a null hypothesis signifies that there is a short run causality running from the following independent variables to the Trading Volume. This hypothesis was rejected, and the results proved that there is a short run causality running from the fluctuations in the TDIR, M/BV ratio, P/E ratio and the inflation rate towards the li-

quidity of the ASE as measured by the Trading Volume. Additionally the results revealed a significant short-run correlation between the liquidity of banks along with the liquidity of the ASE.

Variable	Chi2	Prob>chi2
M/BV	118.49	0.000
TDIR	69.95	0.000
Inflation Rate	52.23	0.000
P/E Ratio	36.68	0.000
JCBL_DUM	45.85	0.004

Table 5.3.5: VEC Model Post-estimation Tests for TV "Jarque-Bera Test"

The following table tries to examine if the residuals are normally distributed or not? Results from the Jarque-Bera tests rejected a null hypothesis assumes that the residuals are normally distributed.

Equation	Chi2	df	Prob>chi2
D_ Trading Volume	39.390	2	0.000

D_ TDIR	1.394	2	0.497
D_ M/BV Ratio	21.132	2	0.000
D_Inflation Rate	86.841	2	0.000
D_P/E Ratio	1.184	2	0.553
D_JCBL_DUM	56.124	2	0.000
All	206.066	12	0.000

Table 5.3.6: VEC Model Post-estimation Tests for TV "Lagrange-Multiplier Test"

This table demonstrates results from Lagrange-Multiplier Test that is applied to examine the status of autocorrelation at lag among the variables. The null hypothesis was confirmed. Meaning that there is no autocorrelation between the examined variables as well as the variables did not present any autocorrelation at lag one or lag two.

lag	**Chi2**	**df**	**Prob>chi2**
1	34.703	36	0.530
2	30.260	36	0.737

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Table 5.3.7: VEC Model Post-estimation Tests for VT "Wald Test"

This table is constructed as a VECM post-estimation test to examine whether or not the following variables are correlated with ASE's liquidity on the short run. To achieve that I tested a null hypothesis signifies that there is a short run causality running from the following independent variables to the value traded. Consequently, the results proved that there is a short run causality running from the fluctuations in the TDIR, M/BV ratio and the rate of inflation towards the liquidity of the ASE as measured by the value traded. Additionally the results revealed a non-significant short-run correlation between the liquidity of banks along with the market's liquidity.

Variable	Chi2	Prob>chi2
M/BV	117.10	0.000
TDIR	49.78	0.000
Inflation Rate	27.99	0.005
P/E Ratio	24.26	0.018
JCBL_DUM	8.26	0.764

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Table 5.3.8: VEC Model Post-estimation Tests for VT "Jarque-Bera Test"

The following table tries to examine if the residuals are normally distributed or not? Results from the Jarque-Bera tests rejected a null hypothesis assumes that the residuals are normally distributed.

Equation	Chi2	df	Prob>chi2
D_ Value Traded	191.14	2	0.000
D_ TDIR	13.32	2	0.001
D_ M/BV Ratio	12.50	2	0.001
D_Inflation Rate	94.24	2	0.000
D_P/E Ratio	0.715	2	0.699
D_JCBL_DUM	70.56	2	0.000
All	382.50	12	0.000

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Table 5.3.9 VEC Model Post-estimation Tests for VT "Lagrange-Multiplier Test"

This table demonstrates results from Lagrange-Multiplier Test that is applied to examine the status of autocorrelation at lag among the variables. The null hypothesis was confirmed. Meaning that there is no autocorrelation between the examined variables as well as the variables did not present any autocorrelation at lag one or lag two.

lag	Chi2	df	Prob>chi2
1	49.94	36	0.061
2	46.15	36	0.119

Table 5.3.10: VEC Model Post-estimation Tests for NOT "Wald Test"

This table is constructed as a VECM post-estimation test to examine whether or not the following variables are correlated with ASE's liquidity on the short run. To achieve that I formulated a null hypothesis signify that there is a short-run causality running from the following independent variables to the No. of transaction. This hypothesis was rejected, and the results proved that there is a short run causality running from the fluctuations in the TDIR, M/BV ratio, and the inflation rate to the stock market liquidity as measured by the total number of the executed contracts.

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Variable	Chi2	Prob>chi2
M/BV	60.08	0.000
TDIR	33.08	0.000
Inflation Rate	48.95	0.000
P/E Ratio	20.26	0.062
JCBL_DUM	13.89	0.307

Table 5.3.11: VEC Model Post-estimation Tests for NOT "Jarque-Bera Test"

The following table tries to examine if the residuals are normally distributed or not? Results from the Jarque-Bera tests rejected the null hypothesis, which assumes that the residuals are normally distributed.

Equation	Chi2	df	Prob>chi2
D. NOT	15.39	2	0.000
D_ TDIR	0.57	2	0.749

D_ M/BV	56.76	2	0.000
Inflation Rate	4.73	2	0.093
P/E Ratio	3.08	2	0.213
D_JCBL_DUM	97.11	2	0.000
All	177.67	12	0.000

Table 5.3.12: VEC Model Post-estimation Tests for NOT "Lagrange-Multiplier Test"

This table demonstrates results from Lagrange-Multiplier Test that is applied to examine the status of autocorrelation at lag among the variables. The null hypothesis was proved. Meaning that there is no autocorrelation between the examined variables did not present any autocorrelation, neither at lag one, nor at lag number two.

Lag	**Chi2**	**df**	**Prob>chi2**
1	55.97	36	0.018
2	30.42	36	0.730

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Appendix H

Hypotheses Summary

The following tables summaries the results of the hypotheses, which are formulated in order to assess the impact of the fluctuations in market fundamentals as well as the financial crisis in the decisions of the Jordanian investors, over the period Q1/2000-Q4/2014.

Table 5. 4.1: Results from the Regression Tests

The following table summarises the results of the first hypothesis, which is formulated in order to assess the impact of the fluctuations in market fundamentals in the liquidity of the Jordanian commercial banks.

First Sub-Hypothesis	Results
The fluctuations in market fundamentals are positively affecting the liquidity of banks as measured by the TLTD ratio.	Reject/ there is no impact.
The fluctuations in market fundamentals are positively affecting the liquidity of banks as measured by the LATA ratio.	Reject/ there is no impact.

The fluctuations in market fundamentals are positively affecting the liquidity of banks as measured by the LATD ratio.	Reject/ there is no impact.
The fluctuations in market fundamentals are positively affecting the liquidity of banks as measured by the TDTA ratio.	Reject/ there is no impact.

5.4.2: Results from the Regression Tests

The following table summarise the results of the hypothesis, which is formulated in order to assess the impact of the fluctuations in market fundamentals in the liquidity of the Amman Stock Exchange.

Second Sub-Hypothesis	**Results**
The fluctuations in market fundamentals are negatively affecting the liquidity of the ASE as measured by the TOR.	Reject/ there is no impact.
The fluctuations in market fundamentals are negatively affecting the liquidity of the ASE as measured by the TV.	Reject/ there is no impact.

The fluctuations in market fundamentals are negatively affecting the liquidity of ASE as measured by the VT.	Reject/ there is no impact.
The fluctuations in market fundamentals are negatively affecting the liquidity of ASE as measured by the NOT.	Reject/ there is no impact.

Table 5.5: Results from the Johansen Tests

The following table summarise the results of the second hypothesis, which is formulated in order to examine whether or not there is a long-run integration between the market fundamentals along with the decisions of the Jordanian investors.

First and Second Sub-Hypotheses	Results
	Market Fundamentals
There is a long-run integration between the fluctuations in market fundamentals along with the liquidity of banks as	Reject

measured by the TLTD ratio.	
There is a long-run integration between the fluctuations in market fundamentals along with the liquidity of banks as measured by the LATA ratio.	Accept
There is a long-run integration between the fluctuations in market fundamentals along with the liquidity of banks as measured by the LATD ratio.	Accept
There is a long-run integration between the fluctuations in market fundamentals along with the liquidity of banks as measured by the TDTA ratio.	Accept
There is a long-run integration between the fluctuations in market fundamentals along with the liquidity of the ASE	Accept

as measured by the TOR.	
There is a long-run integration between the fluctuations in market fundamentals along with the liquidity of the ASE as measured by the TV.	Accept
There is a long-run integration between the fluctuations in market fundamentals along with the liquidity of the ASE as measured by the VT.	Accept
There is a long-run integration between the fluctuations in market fundamentals along with the liquidity of the ASE as measured by the NOT.	Accept

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Table 5.6.1: Results from the VAR and the VECM Tests

The following table summarise the results of the third hypothesis, which is formulated in order to examine whether or not there is a significant long-run causality running from the fluctuations in market fundamentals to the liquidity of the Jordanian commercial banks and the Amman Stock Exchange.

First and Second Sub-Hypotheses	Results			
	TDIR	**M/BV**	**P/E**	**CPI**
There is a significant long-run causality running from the fluctuations in the TDIR, M/BV, P/E and the inflation to the liquidity of banks as measured by the TLTD ratio.	Reject	Reject	Reject	Reject
There is a significant long-run causality running from the fluctuations in the TDIR, M/BV, P/E and the inflation to the liquidity of banks as measured by the LATA ratio.	Accept	Accept	Accept	Accept
There is a significant long-run causality running from the	Accept	Accept	Accept	Accept

fluctuations in the TDIR, M/BV, P/E and the inflation to the liquidity of banks as measured by the LATD ratio.				
There is a significant long-run causality running from the fluctuations in the TDIR, M/BV, P/E and the inflation to the liquidity of banks as measured by the TDTA ratio.	Accept	Accept	Accept	Accept
There is a significant long-run causality running from the fluctuations in the TDIR, M/BV, P/E and the inflation to the liquidity of the ASE as measured by the TOR.	Accept	Accept	Accept	Accept
There is a significant long-run causality running from the fluctuations in the TDIR, M/BV, P/E and the inflation to the liquidity of the ASE as measured by the TV.	Accept	Accept	Accept	Accept
There is a significant long-run causality running from the	Accept	Accept	Accept	Accept

fluctuations in the TDIR, M/BV, P/E and the inflation to the liquidity of the ASE as measured by the VT.				
There is a significant long-run causality running from the fluctuations in the TDIR, M/BV, P/E and the inflation to the liquidity of the ASE as measured by the NOT.	Accept	Accept	Accept	Accept

Table 5.6.2: Wald Tests/ Hypotheses Summary

The following table summarise the results of the third hypothesis, which is formulated in order to examine whether or not there is a significant short-run causality running from the fluctuations in the market fundamentals to the liquidity of the Jordanian commercial banks and the Amman Stock Exchange.

Third and Fourth Sub-Hypotheses	**Results**			
	TDIR	**M/BV**	**P/E**	**CPI**
There is a significant short-run causality running from the	Reject	Reject	Reject	Reject

fluctuations in the TDIR, M/BV, P/E and the inflation to the liquidity of banks as measured by the TLTD ratio.				
There is a significant short-run causality running from the fluctuations in the TDIR, M/BV, P/E and the inflation to the liquidity of banks as measured by the LATA ratio.	Accept	Accept	Accept	Reject
There is a significant short-run causality running from the fluctuations in the TDIR, M/BV, P/E and the inflation to the liquidity of banks as measured by the LATD ratio.	Accept	Accept	Reject	Reject
There is a significant short-run causality running from the fluctuations in the TDIR, M/BV, P/E and the inflation to the liquidity of banks as measured by the TDTA ratio.	Accept	Accept	Accept	Reject
There is a significant short-run causality running from the	Accept	Accept	Accept	Accept

fluctuations in the TDIR, M/BV, P/E and the inflation to the liquidity of the ASE as measured by the TOR.				
There is a significant short-run causality running from the fluctuations in the TDIR, M/BV, P/E and the inflation to the liquidity of the ASE as measured by the TV.	Accept	Accept	Accept	Accept
There is a significant short-run causality running from the fluctuations in the TDIR, M/BV, P/E and the inflation to the liquidity of the ASE as measured by the VT.	Accept	Accept	Reject	Accept
There is a significant short-run causality running from the fluctuations in the TDIR, M/BV, P/E and the inflation to the liquidity of the ASE as measured by the NOT.	Accept	Accept	Reject	Accept

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Table 5.7.1: Results from the ANOVA Tests

This table summarise the results of the hypotheses, which are formulated in order to assess the impacts of the 2007/8 financial crisis in the decisions of the Jordanian investors as measured by the liquidity of banks and the Amman Stock Exchange.

Banks' Liquidity	**Results**		
	Before the Crisis	During	After
Before, during or after the financial crisis, there are no significant differences between the decisions of Jordanian investors' as measured by TLTD due to the fluctuations the in TDIR.	Accept	Accept	Accept
Before, during or after the financial crisis, there are no significant differences between the decisions of Jordanian investors' as measured by LATA due to the fluctuations in the	Reject	Accept	Accept

TDIR.			
Before, during or after the financial crisis, there are no significant differences between the decisions of Jordanian investors' as measured by LATD due to the fluctuations in the TDIR.	Reject	Accept	Accept
Before, during or after the financial crisis, there are no significant differences between the decisions of Jordanian investors' as measured by TDTA due to the fluctuations in the TDIR.	Reject	Accept	Accept
Before, during or after the financial crisis, there are no significant differences between the decisions of Jordanian investors' as measured by TLTD due to the fluctuations in the M/BV ratio.	Reject	Accept	Accept

Before, during or after the financial crisis, there are no significant differences between the decisions of Jordanian investors' as measured by LATA due to the fluctuations in the M/BV ratio.	Accept	Reject	Reject
Before, during or after the financial crisis, there are no significant differences between the decisions of Jordanian investors' as measured by LATD due to the fluctuations in the M/BV ratio.	Accept	Accept	Accept
Before, during or after the financial crisis, there are no significant differences between the decisions of Jordanian investors' as measured by TDTA due to the fluctuations in the M/BV ratio.	Accept	Reject	Reject

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Continued Table 5.7.1: Results from the ANOVA Tests

Banks' Liquidity	**Results**		
	Before the Crisis	During	After
Before, during or after the financial crisis, there are no significant differences between the decisions of Jordanian investors' as measured by TLTD due to the fluctuations in P/E ratio.	Reject	Accept	Reject
Before, during or after the financial crisis, there are no significant differences between the decisions of Jordanian investors' as measured by LATA due to the fluctuations in P/E ratio.	Accept	Accept	Reject
Before, during or after the financial crisis,	Accept	Accept	Reject

there are no significant differences between the decisions of Jordanian investors' as measured by LATD due to the fluctuations in P/E ratio.			
Before, during or after the financial crisis, there are no significant differences between the decisions of Jordanian investors' as measured by TDTA due to the fluctuations in P/E ratio.	Accept	Accept	Reject
Before, during or after the financial crisis, there are no significant differences between the decisions of Jordanian investors' as measured by TLTD due to the fluctuations in the inflation rate.	Reject	Accept	Reject
Before, during or after the financial crisis, there are no significant differences between	Accept	Accept	Reject

the decisions of Jordanian investors' as measured by LATA due to the fluctuations in the inflation rate.			
Before, during or after the financial crisis, there are no significant differences between the decisions of Jordanian investors' as measured by LATD due to the fluctuations in the inflation rate.	Accept	Accept	Reject
Before, during or after the financial crisis, there are no significant differences between the decisions of Jordanian investors' as measured by TDTA due to the fluctuations in the inflation rate.	Accept	Accept	Reject

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Table 5.7.2: Results from the ANOVA Tests

ASE's Liquidity	**Results**		
	Before the Crisis	During	After
Before, during or after the financial crisis, there are no significant differences between the decisions of Jordanian investors' as measured by TOR due to the fluctuations in the TDIR.	Reject	Reject	Accept
Before, during or after the financial crisis, there are no significant differences between the decisions of Jordanian investors' as measured by TV due to the fluctuations in the TDIR.	Accept	Accept	Accept
Before, during or after the financial crisis,	Reject	Accept	Accept

there are no significant differences between the decisions of Jordanian investors' as measured by VT due to the fluctuations in the TDIR.			
Before, during or after the financial crisis, there are no significant differences between the decisions of Jordanian investors' as measured by NOT due to the fluctuations in the TDIR.	Reject	Accept	Accept
Before, during or after the financial crisis, there are no significant differences between the decisions of Jordanian investors' as measured by TOR due to the fluctuations in the M/BV ratio.	Reject	Reject	Reject
Before, during or after the financial crisis, there are no significant differences between	Reject	Reject	Reject

the decisions of Jordanian investors' as measured by TV due to the fluctuations in the M/BV ratio.			
Before, during or after the financial crisis, there are no significant differences between the decisions of Jordanian investors' as measured by VT due to the fluctuations in the M/BV ratio.	Accept	Reject	Reject
Before, during or after the financial crisis, there are no significant differences between the decisions of Jordanian investors' as measured by NOT due to the fluctuations in the M/BV ratio.	Reject	Reject	Reject

Continued Table 5.7.2: Results from the ANOVA Tests

ASE's Liquidity	Results		
	Before the Crisis	During	After
Before, during or after the financial crisis, there are no significant differences between the decisions of Jordanian investors' as measured by TOR due to the fluctuations in the P/E ratio.	Reject	Accept	Reject
Before, during or after the financial crisis, there are no significant differences between the decisions of Jordanian investors' as measured by TV due to the fluctuations in the P/E ratio.	Reject	Accept	Reject
Before, during or after the financial crisis,	Reject	Accept	Reject

there are no significant differences between the decisions of Jordanian investors' as measured by VT due to the fluctuations in the P/E ratio.			
Before, during or after the financial crisis, there are no significant differences between the decisions of Jordanian investors' as measured by NOT due to the fluctuations in the P/E ratio.	Reject	Accept	Reject
Before, during or after the financial crisis, there are no significant differences between the decisions of Jordanian investors' as measured by TOR due to the fluctuations in the inflation rate.	Reject	Reject	Reject
Before, during or after the financial crisis, there are no significant differences between	Reject	Accept	Reject

the decisions of Jordanian investors' as measured by TV due to the fluctuations in the inflation rate.			
Before, during or after the financial crisis, there are no significant differences between the decisions of Jordanian investors' as measured by VT due to the fluctuations in the inflation rate.	Reject	Reject	Reject
Before, during or after the financial crisis, there are no significant differences between the decisions of Jordanian investors' as measured by NOT due to the fluctuations in the inflation rate.	Reject	Reject	Reject

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Appendix I

After Dropping the Arab Bank from the Study's Sample

The following tables shows the results of the tests, which are applied in order to assess the impacts of the fluctuations in market fundamentals in the liquidity of the Jordanian commercial banks after dropping the Arab bank from the sample of this research.

Table 5.8.1: Augmented Dickey Fuller's Results after Adding the first Difference

The following table demonstrates the time series variables which became stationary after adding the first difference.

Variable	Level 5%	P-Value	1st Diff	Remark	H_0
MBV Ratio	-3.494	0.020	1	I (I)	Rejected
TDIR	-3.494	0.010	1	I (I)	Rejected
CPI	-3.495	0.003	1	I (I)	Rejected
P/E Ratio	-3.495	0.005	1	I (I)	Rejected
TLTD	-3.495	0.000	1	I (I)	Rejected

LATA	-3.494	0.000	1	I (I)	Rejected
LATD	-3.493	0.000	1	I (I)	Rejected
TDTA	-3.494	0.000	1	I (I)	Rejected
ASEL_DUM/ JCBL_DUM	-3.493	0.000	1	I (I)	Rejected
Note: *** indicates that the time series variables are significant at 5 per cent level of significance.					

Table 5.8.2: The Impact of Market Fundamentals in the TLTD Ratio

The following table is constructed in order to test the first sub-hypothesis ($H_{1.1}$) which assumes that the fluctuations in the TDIR, M/BV ratio, P/E ratio and the inflation are positively affecting the liquidity of the Jordanian commercial banks. Consequently, the results revealed a non-significant correlation between the fluctuations in the TDIR, M/BV, P/E, CPI and the market's liquidity along with the liquidity of banks as measured by the TLTD ratio.

Regress D.TLTD D.M/BV D.TDIR D.P/E ratio D. CPI D.ASEL_DUM, level(99)

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Source		**SS**	**Df**	**MS**	No. of obs.= 59 F(5, 53)= 1.36 Prob.> F = 0.254 R^2= 0.113 Adj R^2= 0.031 Root MSE= 0.032	
Model		0.007	5	0.001		
Residual		0.056	53	0.001		
Total		0.064	58	0.001		
TLTD	**Coef.**	Std.Err.	T	P>t	[99% Conf.	Interval]
D.M/BV	-0.005	0.070	-0.08	0.936	-0.147	0.135
D.TDIR	0.003	0.024	0.14	0.888	-0.044	0.051
D.P/E Ratio	0.278	0.127	2.18	0.034	0.022	0.535
D.CPI	0.140	0.779	0.18	0.858	-1.422	1.702
D.ASEL_DUM	-0.013	0.015	-0.90	0.372	-0.044	0.017

_cons	-0.004	0.004	-1.12	0.268	-0.013	0.003

Table 5.8.3: The Impact of Market Fundamentals in the LATD Ratio

The following table is constructed in order to test the first sub-hypothesis ($H_{1.1}$) which assumes that the fluctuations in the TDIR, M/BV ratio, P/E ratio and the inflation are positively affecting the liquidity of the Jordanian commercial banks. Consequently, the results revealed a non-significant correlation between the fluctuations in the TDIR, M/BV, P/E, CPI and the market's liquidity along with the liquidity of banks as measured by the LATD ratio.

Regress D.LATD D.M/BV D.TDIR D.P/E ratio D. CPI D.ASEL_DUM, level(99)				
Source	**SS**	**Df**	**MS**	No. of obs.= 59
Model	0.001	5	0.002	F(5, 53)= 1.19 Prob.> F = 0.325 R^2= 0.101 Adj R^2= 0.016

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					Root MSE= 0.043	
Residual		0.102	53	0.001		
Total		0.113	58			
LATD	**Coef.**	Std.Err.	T	P>t	[99% Conf.	Interval]
D.M/BV	-0.096	0.094	-1.03	0.310	-0.286	0.092
D.TDIR	0.070	0.032	2.18	0.034	0.005	0.134
D.CPI	-0.246	1.042	-0.24	0.814	-2.338	1,845
D.P/E Ratio	0.124	0.171	0.73	0.470	-0.218	0.468
D.ASEL_DUM	-0.000	0.020	-0.02	0.982	-0.041	0.040
_cons	-0.007	0.005	-1.28	0.205	-0.019	0.004

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Table 5.8.4: The Impact of Market Fundamentals in the TDTA Ratio

The following table is constructed in order to test the first sub-hypothesis ($H_{1.1}$) which assumes that the fluctuations in the TDIR, M/BV ratio, P/E ratio and the inflation are positively affecting the liquidity of the Jordanian commercial banks. Consequently, the results revealed a non-significant correlation between the fluctuations in the TDIR, M/BV, P/E, CPI and the market's liquidity along with the liquidity of banks as measured by the TDTA ratio.

Regress D.TDTA D.M/BV D.TDIR D.P/E ratio D. CPI D.ASEL_DUM, level(99)				
Source	**SS**	**Df**	**MS**	No. of obs.= 59 F(5, 53)= Prob.> F = R^2= Adj R^2= Root MSE=
Model	0.017	5	0.003	
Residual	0.117	53	0.002	
Total	0.134	58	0.002	

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TDTA	**Coef.**	Std.Err.	T	P>t	[99% Conf.	Interval]
D.M/BV	-0.073	0.101	-0.72	0.474	-0.276	0.130
D.TDIR	0.069	0.034	2.01	0.049	0.000	0.138
D.P/E Ratio	0.148	0.183	0.81	0.424	-0.220	0.516
D.CPI	-2.346	1.119	-2.10	0.041	-4.591	-0.100
D.ASEL_DUM	-0.008	0.002	-0.38	0.709	-0.052	0.036
_cons	-0.005	0.006	-0.87	0.387	-0.018	0.007

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Table 5.8.5: The Impact of Market Fundamentals in the LATA Ratio

The following table is constructed in order to test the first sub-hypothesis ($H_{1.1}$) which assumes that the fluctuations in the TDIR, M/BV ratio, P/E ratio and the inflation are positively affecting the liquidity of the Jordanian commercial banks. Consequently, the results revealed a non-significant correlation between the fluctuations in the TDIR, M/BV, P/E, CPI and the market's liquidity along with the liquidity of banks as measured by the LATA ratio.

Regress D.LATA D.M/BV D.TDIR D.P/E ratio D. CPI D.ASEL_DUM, level(99)				
Source	**SS**	**Df**	**MS**	No. of obs.= 59 F(5, 53)= Prob.> F = R^2= Adj R^2= Root MSE=
Model	0.017	5	0.003	
Residual	0.117	53	0.002	

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Total		0.134	58	0.002		
LATA	**Coef.**	Std.Err.	T	P>t	[99% Conf.	Interval]
D.M/BV	-0.073	0.101	-0.72	0.474	-0.276	0.130
D.TDIR	0.069	0.034	2.01	0.049	0.000	0.138
D.P/E Ratio	0.148	0.183	0.81	0.424	-0.220	0.516
D.CPI	-2.346	1.119	-2.10	0.041	-4.591	-0.100
D.ASEL_DUM	-0.008	0.002	-0.38	0.709	-0.052	0.036
_cons	-0.005	0.006	-0.87	0.387	-0.018	0.007

Table 5.8.6: Robustness Regression Test

The following tables shows the results of the robust standard error tests, which are applied in order to check the relationship of market fundamentals along with the liquidity of the Jordanian commercial banks as a proxy for the decisions of Jordanian in-

vestors. Consequently, the results showed that the p values are high and there is no relationship between the examined variables due to the high values of the standard error.

Jordanian Commercial Banks' Liquidity										
Banks' Liquidity	**P-Value**					**Robust Std. Error**				
	TDIR	**M/BV**	**P/E**	**CPI**	**DUM**	**TDIR**	**M/BV**	**P/E**	**CPI**	**DUM**
TLTD	**0.85**	**0.93**	**0.04**	**0.80**	**0.59**	**0.01**	**0.06**	**0.13**	**0.56**	**0.02**
LATA	**0.03**	**0.45**	**0.46**	**0.00**	**0.74**	**0.03**	**0.09**	**0.20**	**0.84**	**0.02**
LATD	**0.03**	**0.33**	**0.51**	**0.83**	**0.98**	**0.03**	**0.10**	**0.18**	**1.16**	**0.02**
TDTA	**0.03**	**0.45**	**0.46**	**0.00**	**0.74**	**0.03**	**0.09**	**0.20**	**0.84**	**0.02**
R-Squared	**TLTD**		**LATA**		**LATD**		**TDTA**			
	0.11		**0.12**		**0.10**		**0.12**			

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Table 5.9.1: Johansen tests for Co-integration

The following table is constructed in order to test the first sub-hypothesis ($H_{2.1}$) which assumes a long-run integration between the fluctuations in the TDIR, M/BV ratio, P/E ratio and the inflation along with the liquidity of the Jordanian commercial banks. Consequently, the results showed a long-run integration between the fluctuations in market fundamental along with the liquidity of banks as measured by the TLTD ratio.

VEC-rank TLTD, M/BV, TDIR, P/E Ratio, CPI and ASEL_DUM, trend(Constant) Lags (3) max

Johansen tests for Co-integration

Trend: Constant				No. of Obs. = 57	
Sample: Q4-2000-Q4-2014				Lags= 3	
Maximum					
Rank	**Max Statistics**	**1% Critical**	**H0**	**Trace Statistics**	**1% Critical**
0	49.81	45.10	R=0	103.47	103.18
1	32.41	38.77	R ≤1	63.56	76.07

2	17.59	32.24	R≤2	31.56	54.46
3	9.43	25.52	R≤3	13.56	35.65
4	3.87	18.63	R≤4	4.12	20.04
5	0.25	6.65	R≤5	0.25	6.65
6	.	.	R≤6	.	.

Table 5.9.2: Vector Error Correction Model "VECM"

The following table is constructed in order to test the first sub-hypothesis ($H_{3.1}$) which assumes that there is a long-run causality running from the fluctuations in the TDIR, M/BV ratio, P/E ratio and the inflation towards the liquidity of the Jordanian commercial banks. Consequently, the results showed a non-significant long-run correlation between the market fundamentals along with the liquidity of banks as measured by the TLTD ratio.

	Coef.	Std. Error	Z	P > /Z/	99% Conf.	Interval
D_TLTD						
_Ce1						

L1	0.157	0.052	3.01	0.003	0.022	0.929
TLTD						
LD.	0.295	0.134	2.20	0.028	-0.051	0.642
L2D.	-0.705	0.144	-4.89	0.000	-1.077	-0.321
M/BV						
LD.	0.130	0.101	1.28	0.200	-0.131	0.391
L2D.	0.068	0.098	0.70	0.485	-0.184	0.321
TDIR						
LD.	-0.048	0.026	-1.81	0.071	-0.118	0.020
L2D.	0.040	0.025	1.58	0.115	-0.025	0.106
CPI						
LD	0.540	0.812	0.67	0.506	-1.551	2.632
L2D	0.635	0.820	0.77	0.439	-1.478	2.749
P/E Ratio						
LD	-0.079	0.133	-0.59	0.553	-0.432	0.264
L2D	0.097	0.132	0.73	0.464	-0.245	0.439

ASE_DUM						
LD.	-0.016	0.014	-1.15	0.249	-0.053	0.020
L2D.	-0.020	0.014	-1.42	0.155	-0.056	0.016
_Cons	-0.001	0.003	-0.42	0.673	0.001	0.008

Table 5.9.3: VEC Model Post-estimation Tests for TLTD "Wald Test"

This table is constructed as a VECM post-estimation test in order to examine whether or not the following variables are correlated with the liquidity of the Jordanian commercial banks on the short run. To achieve that I tested a null hypothesis signifies that there is a short-run causality running from the following independent variables to the TLTD ratio. Consequently, the results revealed that there is a short run causality running from the fluctuations in the TDIR, M/BV ratio, P/E ratio and the inflation along with the liquidity of banks as measured by the TLTD ratio.

Wald Test

Variable	Chi2	Prob.>chi2

M/BV	54.34	0.000
TDIR	31.73	0.001
Inflation Rate	52.58	0.000
P/E Ratio	33.71	0.000
JCBL_DUM	12.42	0.412

Table 5.9.4: Johansen tests for Co-integration

The following table is constructed in order to test the first sub-hypothesis ($H_{2.1}$) which assumes a long-run integration between the fluctuations in the TDIR, M/BV ratio, P/E ratio and the inflation along with the liquidity of the Jordanian commercial banks. Consequently, the results showed a long-run integration between the fluctuations in market fundamental along with the liquidity of banks as measured by the LATD ratio.

VEC-rank LATD, M/BV, TDIR, P/E Ratio, CPI and ASEL_DUM, trend(Constant)

Lags (3) max

Johansen tests for Co-integration

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Trend: Constant				No. of Obs. = 57	
Sample: Q4-2000-Q4-2014				Lags= 3	
Maximum					
Rank	**Max Statistics**	**1% Critical**	**H0**	**Trace Statistics**	**1% Critical**
0	45.10	38.77	R=0	106.82	103.18
1	28.33	31.81	R ≤1	75.00	76.07
2	19.05	32.24	R≤2	46.66	54.46
3	15.65	25.52	R≤3	27.61	35.65
4	8.08	18.63	R≤4	11.95	20.04
5	3.87	6.65	R≤5	3.87	6.65
6	.	.	R≤6		

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Table 5.9.5: Vector Error Correction Model "VECM"

The following table is constructed in order to test the second sub-hypothesis ($H_{2.1}$) which assumes that there is no long-run integration between the fluctuations in the TDIR, M/BV ratio, P/E ratio and the inflation along with the liquidity of the Jordanian commercial banks. Consequently, the results showed a long-run integration between the fluctuations in market fundamental along with the liquidity of banks as measured by the LATD ratio.

VEC-rank LATD, M/BV, TDIR, P/E Ratio, CPI and ASEL_DUM, trend(Constant) Lags (3) max

Johansen tests for Co-integration

Trend: Constant				No. of Obs. = 57	
Sample: Q4-2000-Q4-2014				Lags= 3	
Maximum					
Rank	**Max Statistics**	**1% Critical**	**H0**	**Trace Statistics**	**1% Critical**
0	48.17	45.10	R=0	106.82	103.18
1	28.33	38.77	R ≤1	75.00	76.07

2	19.05	32.24	R≤2	46.66	54.46
3	15.65	25.52	R≤3	27.61	35.65
4	8.08	18.63	R≤4	11.95	20.04
5	3.87	6.65	R≤5	3.87	6.65
6	.	.	R≤6	.	.

Table 5.9.6: Vector Error Correction Model "VECM"

The following table is constructed in order to test the first sub-hypothesis ($H_{3.1}$) which assumes that there is a long-run causality running from the fluctuations in the TDIR, M/BV ratio, P/E ratio and the inflation towards the liquidity of the Jordanian commercial banks. Consequently, the results showed a non-significant long-run correlation between the market fundamentals along with the liquidity of banks as measured by the LATD ratio.

	Coef.	Std. Error	Z	P > /Z/	99% Conf.	Interval
D_LATD						
_Ce1						

L1	-0.120	0.061	-1.96	0.050	-0.278	0.037
LATD						
LD.	0.781	0.144	5.42	0.000	0.410	1.152
L2D.	-0.158	0.113	-1.40	0.162	-0.450	0.133
M/BV						
LD.	0.034	0.079	0.44	0.661	-0.169	0.239
L2D.	-0.053	0.077	-0.69	0.489	-0.254	0.146
TDIR						
LD.	0.014	0.020	0.67	0.503	-0.039	0.067
L2D.	0.003	0.020	0.16	0.870	-0.049	0.056
CPI						
LD	1.678	0.665	2.52	0.012	-0.034	3.392
L2D	-1.152	0.701	-1.64	0.100	-2.959	0.653
P/E Ratio						
LD	0.139	0.102	1.36	0.173	-0.123	0.402
L2D	-0.033	0.094	-0.36	0.722	-0.276	0.208

ASE_DUM						
LD.	-0.022	0.011	-1.97	0.049	-0.050	0.006
L2D.	-0.004	0.010	-0.33	0.693	-0.030	0.022
_Cons	-0.002	0.002	-0.75	0.453	-0.003	0.005

Table 5.9.7: VEC Model Post-estimation Tests for LATD "Wald Test"

This table is constructed as a VECM post-estimation test in order to examine whether or not the following variables are correlated with the liquidity of the Jordanian commercial banks on the short run. To achieve that I tested a null hypothesis signifies that there is a short-run causality running from the following independent variables to the LATD ratio. Consequently, the results revealed that there is a short run causality running from the fluctuations in the TDIR, M/BV ratio, P/E ratio and the inflation along with the liquidity of banks as measured by the LATD ratio.

Wald Test

Variable	Chi2	Prob.>chi2

M/BV	79.33	0.000
TDIR	31.48	0.001
Inflation Rate	21.31	0.046
P/E Ratio	17.12	0.145
JCBL_DUM	10.94	0.533

Table 5.9.8: Johansen Tests for Co-integration

The following table is constructed in order to test the first sub-hypothesis ($H_{2.1}$) which assumes a long-run integration between the fluctuations in the TDIR, M/BV ratio, P/E ratio and the inflation along with the liquidity of the Jordanian commercial banks. Consequently, the results showed a long-run integration between the fluctuations in market fundamental along with the liquidity of banks as measured by the TDTA ratio.

VEC-rank TDTA, M/BV, TDIR, P/E Ratio, CPI and ASEL_DUM, trend(Constant)

Lags (3) max

Johansen tests for Co-integration

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Trend: Constant				No. of Obs. = 57	
Sample: Q4-2000-Q4-2014				Lags= 3	
Maximum					
Rank	**Max Statistics**	**1% Critical**	**H0**	**Trace Statistics**	**1% Critical**
0	51.43	45.10	R=0	127.13	103.18
1	29.18	38.77	R ≤1	75.69	76.07
2	19.03	32.24	R≤2	46.50	54.46
3	16.47	25.52	R≤3	27.47	35.65
4	7.63	18.63	R≤4	10.99	20.04
5	3.36	6.65	R≤5	3.36	6.65
6	.	.	R≤6		

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Table 5.9.9: Vector Error Correction Model "VECM"

The following table is constructed in order to test the first sub-hypothesis ($H_{3.1}$) which assumes that there is a long-run causality running from the fluctuations in the TDIR, M/BV ratio, P/E ratio and the inflation towards the liquidity of the Jordanian commercial banks. Consequently, the results showed a significant long-run correlation between the market fundamentals along with the liquidity of banks as measured by the TDTA ratio.

	Coef.	Std. Error	Z	P > /Z/	99% Conf.	Interval
D_TDTA						
_Ce1						
L1	-0.301	0.073	-4.09	0.000	-0.445	-0.156
TDTA						
LD.	0.826	0.134	6.46	0.000	0.563	1.089
L2D.	-0.053	0.120	-0.45	0.655	-0.289	0.181
M/BV						
LD.	-0.017	0.084	-0.21	0.832	-0.183	0.147
L2D.	0.048	0.079	0.61	0.545	-0.107	0.203

TDIR						
LD.	-0.021	0.023	-0.90	0.368	-0.067	0.025
L2D.	0.004	0.022	0.22	0.829	-0.039	0.048
CPI						
LD	2.683	0.829	3.23	0.001	1.057	4.309
L2D	-0.831	0.0774	-1.07	0.283	-2.349	0.686
P/E Ratio						
LD	0.144	0.112	1.29	0.196	-0.074	0.364
L2D	0.094	0.111	0.84	0.398	-0.124	0.313
ASE_DUM						
LD.	0.013	0.013	1.04	0.298	-0.011	0.039
L2D.	0.004	0.011	0.38	0.701	-0.018	0.027
_Cons	0.002	0.003	0.64	0.524	-0.004	0.008

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Table 5.9.10: VEC Model Post-estimation Tests for TDTA "Wald Test"

This table is constructed as a VECM post-estimation test in order to examine whether or not the following variables are correlated with the liquidity of the Jordanian commercial banks on the short run. To achieve that I tested a null hypothesis signifies that there is a short-run causality running from the following independent variables to the TDTA ratio. Consequently, the results revealed that there is a short run causality running from the fluctuations in the TDIR, M/BV ratio, P/E ratio and the inflation along with the liquidity of banks as measured by the TDTA ratio.

Wald Test

Variable	Chi2	Prob.>chi2
M/BV	72.79	0.000
TDIR	31.57	0.001
Inflation Rate	55.93	0.000
P/E Ratio	82.64	0.000
JCBL_DUM	8.53	0.742

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Table 5.9.11: Johansen tests for Co-integration

The following table is constructed in order to test the first sub-hypothesis ($H_{2.1}$) which assumes a long-run integration between the fluctuations in the TDIR, M/BV ratio, P/E ratio and the inflation along with the liquidity of the Jordanian commercial banks. Consequently, the results showed a long-run integration between the fluctuations in market fundamental along with the liquidity of banks as measured by the LATA ratio.

VEC-rank LATA, M/BV, TDIR, P/E Ratio, CPI and ASEL_DUM, trend(Constant) Lags (3) max

Johansen tests for Co-integration

Trend: Constant				No. of Obs. = 57	
Sample: Q4-2000-Q4-2014				Lags= 3	
Maximum					
Rank	**Max Statistics**	**1% Critical**	**H0**	**Trace Statistics**	**1% Critical**
0	51.43	45.10	R=0	127.13	103.18
1	29.18	38.77	R ≤1	75.69	76.07

2	19.03	32.24	R≤2	46.50	54.46
3	16.47	25.52	R≤3	27.47	35.65
4	7.63	18.63	R≤4	10.99	20.04
5	3.36	6.65	R≤5	3.36	6.65
6	.	.	R≤6		

Table 5.9.12: Vector Error Correction Model "VECM"

The following table is constructed in order to test the first sub-hypothesis ($H_{3.1}$) which assumes that there is a long-run causality running from the fluctuations in the TDIR, M/BV ratio, P/E ratio and the inflation towards the liquidity of the Jordanian commercial banks. Consequently, the results showed a significant long-run correlation between the market fundamentals along with the liquidity of banks as measured by the LATA ratio.

	Coef.	Std. Error	Z	P > /Z/	99% Conf.	Interval
D_LATA						
_Ce1						

L1	-0.301	0.073	-4.09	0.000	-0.445	-0.156
LATA						
LD.	0.826	0.134	6.46	0.000	0.563	1.089
L2D.	-0.053	0.120	-0.45	0.655	-0.289	0.181
M/BV						
LD.	-0.017	0.084	-0.21	0.832	-0.183	0.147
L2D.	0.048	0.079	0.61	0.545	-0.107	0.203
TDIR						
LD.	-0.021	0.023	-0.90	0.368	-0.067	0.025
L2D.	0.004	0.022	0.22	0.829	-0.039	0.048
CPI						
LD	2.683	0.829	3.23	0.001	1.057	4.309
L2D	-0.831	0.0774	-1.07	0.283	-2.349	0.686
P/E Ratio						
LD	0.144	0.112	1.29	0.196	-0.074	0.364
L2D	0.094	0.111	0.84	0.398	-0.124	0.313

ASE_DUM						
LD.	0.013	0.013	1.04	0.298	-0.011	0.039
L2D.	0.004	0.011	0.38	0.701	-0.018	0.027
_Cons	0.002	0.003	0.64	0.524	-0.004	0.008

Table 5.9.13: VEC Model Post-estimation Tests for LATA "Wald Test"

This table is constructed as a VECM post-estimation test in order to examine whether or not the following variables are correlated with the liquidity of the Jordanian commercial banks on the short run. To achieve that I tested a null hypothesis signifies that there is a short-run causality running from the following independent variables to the LATA ratio. Consequently, the results revealed that there is a short run causality running from the fluctuations in the TDIR, M/BV ratio, P/E ratio and the inflation along with the liquidity of banks as measured by the LATA ratio.

Wald Test

Variable	Chi2	Prob.>chi2
M/BV	72.79	0.000

TDIR	31.57	0.001
Inflation Rate	55.93	0.000
P/E Ratio	82.64	0.000
JCBL_DUM	8.53	0.742

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Appendix J

In an attempt to identify the Preferences of the Jordanian Investors

Table 6.1: The Behaviour of Jordanian Investors before the Crisis Period

The following table illustrates the behaviour of the Jordanian investors before the 2007/8 financial crisis. In other words, the study measured the impacts of the fluctuations in the TDIR, M/BV ratio, P/E ratio, and the inflation rate in the decisions of the Jordanian investors before the crisis period "Q1/2000-Q4/2007".

	M/BV Ratio	**TDIR**	**P/E Ratio**	**Inflation Rate**	**Mean**
M/BV Ratio	**1.000**				2.09
TDIR	**-0.330**	**1.000**			0.0445
P/E Ratio	**0.825**	**-0.540**	**1.000**		22.41
Inflation Rate	**0.865**	**-0.003**	**0.488**	**1.000**	88.51
TLTD	**0.6905**	**0.283**	**0.309**	**0.848**	

LATA	**-0.254**	**0.573**	**-0.014**	**0.470**	
LATD	**0.037**	**-0.532**	**0.085**	**-0.011**	
TDTA	**-0.254**	**0.573**	**-0.014**	**0.470**	
TOR	**0.970**	**-0.269**	**0.706**	**0.922**	
TV	**0.875**	**0.000**	**0.492**	**0.987**	
VT	**0.925**	**-0.077**	**0.694**	**0.880**	
NOT	**0.901**	**-0.041**	**0.539**	**0.977**	
ASEL_DUM or JCBL_DUM	**-0.396**	**-0.035**	**-0.289**	**-0.317**	

Table 6.2: The Behaviour of Jordanian Investors during the Crisis Period

The following table illustrates the behaviour of the Jordanian investors during the 2007/8 financial crisis. In other words, the study measured the impacts of the fluctuations in the TDIR, M/BV ratio, P/E ratio, and the inflation rate in the decisions of the Jordanian investors during the crisis period "Q1/2008-Q4/2011".

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	M/BV Ratio	TDIR	P/E Ratio	Inflation Rate	Mean
M/BV Ratio	**1.000**				1.92
TDIR	**0.861**	**1.000**			**0.0429**
P/E Ratio	**-0.051**	**-0.324**	**1.000**		**21.03**
Inflation Rate	**-0.956**	**-0.767**	**0.192**	**1.000**	97.04
TLTD	**-0.478**	**-0.651**	**0.551**	**0.431**	
LATA	**-0.291**	**-0.330**	**-0.167**	**0.107**	
LATD	**-0.116**	**-0.271**	**-0.467**	**-0.174**	
TDTA	**-0.291**	**-0.330**	**-0.167**	**0.107**	
TOR	**0.364**	**0.219**	**-0.129**	**-0.503**	
TV	**-0.299**	**-0.368**	**0.105**	**0.118**	
VT	**-0.828**	**0.956**	**-0.389**	**-0.767**	
NOT	**-0.868**	**0.924**	**-0.484**	**-0.872**	
ASEL_DUMor	**0.327**	**0.229**	**-0.105**	**-0.418**	

JCBL_DUM					

Table 6.3: The Behaviour of Jordanian Investors after the Crisis Period

The following table illustrates the behaviour of the Jordanian investors after the 2007/8 financial crisis. In other words, the study measured the impacts of the fluctuations in the TDIR, M/BV ratio, P/E ratio, and the inflation rate in the decisions of the Jordanian investors after the crisis period "Q1/2012-Q4/2014".

	M/BV Ratio	**TDIR**	**P/E Ratio**	**Inflation Rate**	**Mean**
M/BV Ratio	**1.000**				1.38
TDIR	**-0.596**	**1.000**			**0.0493**
P/E Ratio	**0.702**	**-0.838**	**1.000**		**16.11**
Inflation Rate	**-0.966**	**0.573**	**-0.794**	**1.000**	111.81
TLTD	**-0.660**	**-0.070**	**-0.342**	**0.755**	
LATA	**-0.654**	**0.051**	**-0.499**	**0.791**	

LATD	**-0.568**	**0.155**	**-0.285**	**0.683**	
TDTA	**-0.654**	**0.051**	**-0.499**	**0.791**	
TOR	**0.567**	**-0.613**	**0.932**	**-0.737**	
TV	**0.544**	**0.592**	**0.920**	**-0.720**	
VT	**-0.547**	**0.505**	**-0.143**	**0.322**	
NOT	**0.474**	**-0.460**	**0.848**	**-0.675**	
ASEL_DUM or JCBL_DUM	**-0.288**	**0.373**	**-0.222**	**0.177**	

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Table 6.4: The Proposed Framework

The following framework is recommended to be used by risk averse investors who are looking for making rational investment decisions.

period	**Range**	**Measure**	**Crisis periods**
Crisis period	2.39%	≤TDIR	Bank
	2.39%	≥TDIR	ASE
	1.31	≤M/BV	Bank
	1.31	≥M/BV	ASE
	11.98	≥ P/E	ASE
	11.98	≤ P/E	Bank
	16.9	≤ Inflation	Bank
	16.9	≥ Inflation	ASE
Period	**Range**	**Measure**	**Normal periods**
Normal periods	0.308%	≤TDIR	Bank

	0.308%	≥TDIR	ASE
	1.43	≥M/BV	ASE
	1.43	≤ M/BV	Bank
	18.65	≥ P/E	ASE
	18.65	≤ P/E	Bank
	14.64	≤ Inflation	Bank
	14.64	≥ Inflation	ASE

Diagram 6.1: The Suggested Decision Tree

During the unstable financial periods, the following diagram recommends investors to deposit their funds into the banks when the time deposit inters rates is higher than 0.0239, while if it is lower, then they are recommended to invest into the stock market instead. On the other hand, if the M/BV ratio is more than 1.31, investors of Jordan are recommended to invest their money into the banks, otherwise, the funds are preferred to be invested in the stock market, because the stock prices will be considered to be undervalued. During the normal periods, investors are recommended to invest into the stock markets if the TDIR is less than 0.0308, otherwise they are recommended to liquidate their securities in order to invest them into the banks. If the M/BV

ratio is lower than 1.43 then the investment into the market will be appreciated, otherwise, it would be better to invest into the banks. Furthermore, during the crisis period, investors of Jordan are recommended to invest their financial resources into the banks if the CPI is more than 16.9, otherwise, they are recommended to invest their funds into the Amman Stock Exchange instead. On the other hand, if the P/E ratio is more than 11.98, investors are advised to deposit their funds into the banks, otherwise, they are recommended to invest them in the stock market. However, during the normal periods, investors are recommended to invest their financial resources into the stock markets if the P/E less than 18.65, otherwise they are recommended to liquidate their securities in order to invest them into the banks. In addition, if the CPI is lower than 14.65 then the investment into the market will be appreciated, otherwise, it would be better for investors to deposit their funds into the banks.

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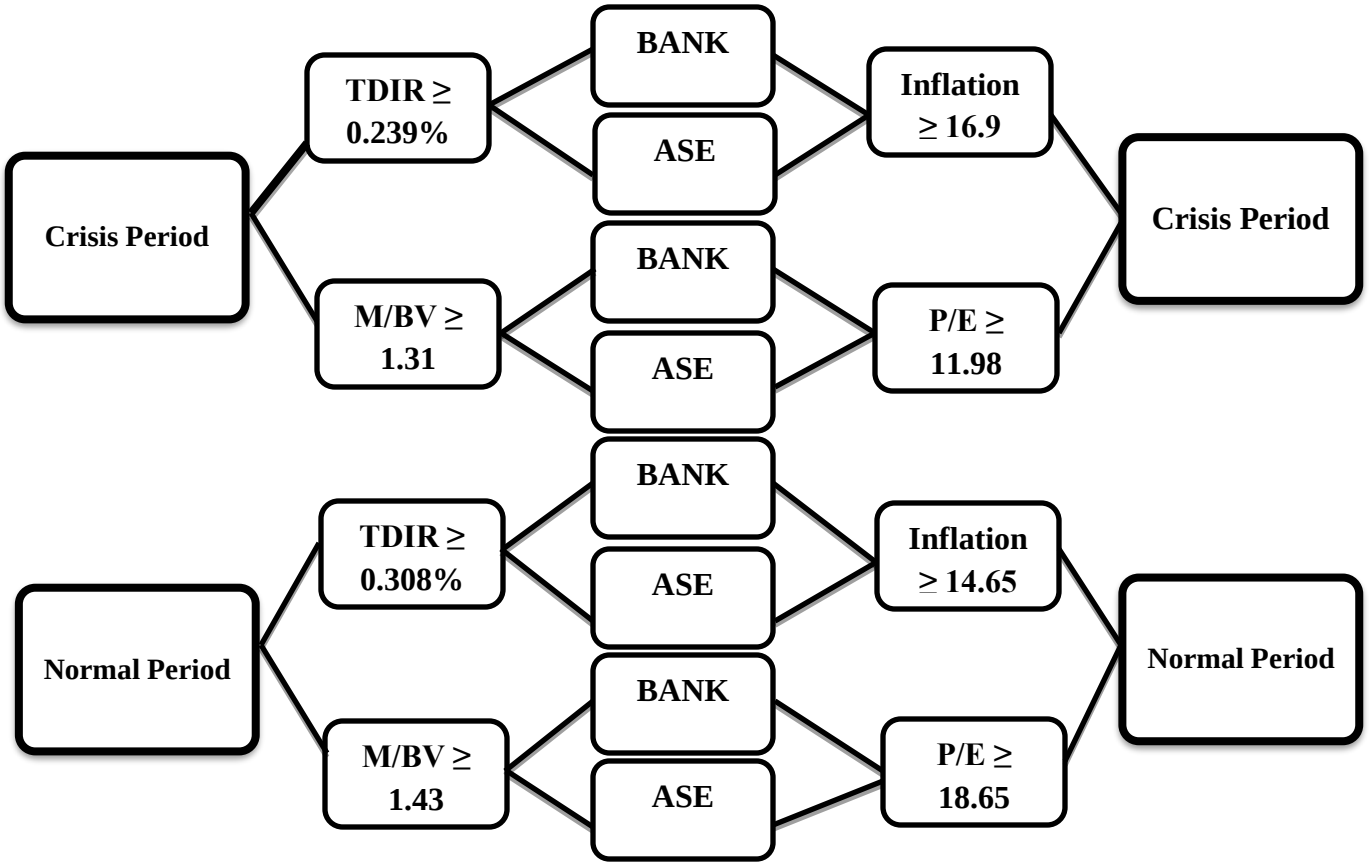
Crisis Period
TDIR ≥ 0.239%
M/BV ≥ 1.31
BANK
ASE
BANK
ASE
Inflation ≥ 16.9
P/E ≥ 11.98
Crisis Period
Normal Period
TDIR ≥ 0.308%
M/BV ≥ 1.43
BANK
ASE
BANK
ASE
Inflation ≥ 14.65
P/E ≥ 18.65
Normal Period

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Table 6.5: Dummy Tabulation

The following table proves that the generated factor, which took the value of zero and one is a numerical variable and it was treated such as other numerical variables of this research.

Dummy Indicator	Freq.	Per cent	Cum.
0	15	25.00	25.00
1	45	75.00	100.00
Total	60	100.00	